12 March 2019

Dear [Name],

I refer to your request dated 10 December 2018, pursuant to the Official Information Act 1982 (the OIA), in which you requested "any emails between MOT at or above tier 3 management level, and NZTA at any level, that have in the subject field the word "compliance" for the periods reporting year 2014-15 and 2015-16". The scope of this request was later extended, following your email dated 21 December 2018, to include emails for the designated two-year period containing the terms "enforcement", "restructure", or "road safety" in the subject field.

The email extending the scope of the request was treated as a new request, pursuant to section 15 of the OIA, and a response was due to you by 12 February 2019. This was extended, pursuant to section 15A of the OIA, to 12 March 2019 in order to search through the large quantity of emails captured by the search of the database, and to enable consultation with affected parties.

There are 25 emails and 13 attachments that fall within the scope of your request. Please find these attached. Information has been withheld under the following sections of the OIA:

- section 9(2)(a) – to protect the privacy of persons
- section 9(2)(h) – to maintain legal professional privilege
- section 6(a) – to prevent prejudice to the security or defence of New Zealand or the international relations of the Government of New Zealand.

Annex One sets out the papers and the applicable OIA grounds concerning any information that has been withheld.

I have considered whether there are any countervailing public interest grounds to release the information that has been withheld and have concluded that there are none.

I note that you provided search criteria to the Ministry with the goal of obtaining information on a particular topic, i.e. whether the Ministry was aware of a general
direction of “less enforcement/more self-regulation” within the NZTA and, if so, what the Ministry had to say about it. You’ll see that the results of that search haven’t returned anything that specifically addresses this topic. However, as you no doubt know, the Ministry is currently conducting a review of the NZTA’s regulatory capability and performance with assistance from independent consultants Martin Jenkins.

In parallel to this review, Martin Jenkins has been contracted to undertake a review of the Ministry’s monitoring of NZTA’s regulatory performance, which will look at the question of how the Ministry fulfilled its monitoring function of the NZTA and it’s regulatory performance. You can view the terms of reference on our website.

The review of NZTA’s regulatory performance is due to be completed at the end of March 2019, and the review of the Ministry’s performance is due to be completed in April. I believe that the review of the Ministry’s monitoring of NZTA will touch on the questions you’ve raised in your requests and, given the reviewers will have access to information from across the Ministry, NZTA, and others, the review will most likely be the best place to find the answers to your questions. We intend to proactively release both reports shortly after they are completed, and we are happy to keep you in the loop about when they are nearing completion.

You have the right under section 28 of the OIA to make a complaint to the Ombudsman about my decisions to withhold information. The address for the Office of the Ombudsman is:

Office of the Ombudsman
PO Box 10152
WELLINGTON 6143

Yours sincerely

Ngaire Best
Manager, Governance and Commercial
Appendix One: Release of information and applicable OIA grounds

<table>
<thead>
<tr>
<th>Ref</th>
<th>Date</th>
<th>Document</th>
<th>Redactions where applicable</th>
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</thead>
</table>
| 1   | 5 April 2016 | Agenda and background reading for Automated Enforcement Compliance meeting Thurs 7 April 1.00pm | Released in part. Information withheld under:  
  - s9(2)(a). |
| 1a  | 5 April 2016 | Agenda Automated Enf 7 April 2016                                       | Released in full.                                                  |
| 2   | 13 June 2016 | Automated Compliance - Agenda Papers for Wed 15 June - 2pm at MoT        | Released in part. Information withheld under:  
  - s9(2)(a). |
| 2a  | 13 June 2016 | Agenda Auto Compliance 15 June 2016                                     | Released in part. Information withheld under:  
  - s9(2)(a). |
| 2b  | 13 June 2016 | Automated Compliance Lit Review 13 June 2016                             | Released in full.                                                  |
| 2c  | 13 June 2016 | Draft outline Auto Compl Discussion Document June 2016                   | Released in full.                                                  |
| 3   | 7 April 2016 | Developing Strategic Direction for Automated Compliance                   | Released in part. Information withheld under:  
  - s9(2)(a). |
| 3a  | 7 April 2016 | Auto Compliance Project Initiation                                        | Released in part. Information withheld under:  
  - s9(2)(a). |
| 4   | 11 May 2016  | Notes from today’s Automated compliance meeting                         | Released in part. Information withheld under:  
  - s9(2)(a). |
| 4a  | 11 May 2016  | Artan et al. _2016_article_for_Siobhan_Bakker_2016.05.06                 | Released in full.                                                  |
| 5   | 18 April 2016 | RE Notes from Automated Enforcement Compliance meeting request for workstream members | Released in part. Information withheld under:  
  - s9(2)(a). |
| 6   | 21 March 2016 | FW Confirmed Date Automated Enforcement Sector Wide Meeting              | Released in part. Information withheld under:  
  - s9(2)(a). |
| 7   | 19 February 2016 | RE Innovative technology for road safety/visiting drivers              | Released in part. Information withheld under:  
  - s9(2)(a). |
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<th>No.</th>
<th>Date</th>
<th>Subject</th>
<th>Released Status</th>
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<tr>
<td>8</td>
<td>11 July 2014</td>
<td>RE PIRAs for Vehicle Compliance rule amendment and OSRS rule amendment proposals</td>
<td>Released in part. Information withheld under: s9(2)(a).</td>
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<tr>
<td>9</td>
<td>15 April 2016</td>
<td>Re Enforcement of proposed Dangerous Goods Rule</td>
<td>Released in part. Information withheld under: s9(2)(a) s9(2)(h).</td>
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<tr>
<td>10</td>
<td>12 November 2014</td>
<td>10.00am - National Road Safety Committee Meeting</td>
<td>Released in part. Information withheld under: s9(2)(a).</td>
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<td>11</td>
<td>18 June 2015</td>
<td>11.00am - National Road Safety Committee Meeting</td>
<td>Released in part. Information withheld under: s9(2)(a).</td>
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<td>12</td>
<td>18 September 2014</td>
<td>8.30am - National Road Safety Committee Meeting</td>
<td>Released in part. Information withheld under: s9(2)(a).</td>
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<td>13</td>
<td>7 June 2016</td>
<td>Accepted FW National Road Safety Management Group</td>
<td>Released in part. Information withheld under: s9(2)(a).</td>
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<tr>
<td>15a</td>
<td>22 April 2015</td>
<td>The Future of Road Safety Conference 2014</td>
<td>Released in full.</td>
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<td>19</td>
<td>19 June 2015</td>
<td>RE Saudi Arabian copy of NZTA road safety advert [IN-CONFIDENCE] [IN-CONFIDENCE]</td>
<td>Released in part. Information withheld under:</td>
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<td>#</td>
<td>Date</td>
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<td>20</td>
<td>27 Feb 2015</td>
<td>Fwd BRI-0497 road safety &amp; visiting drivers</td>
<td>Released in part. Information withheld under:</td>
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<td>• s9(2)(a)</td>
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<td>• s6(a)</td>
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<td>20a</td>
<td>27 Feb 2015</td>
<td>BRI-0497 Road safety visiting drivers 27 Feb 2015</td>
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<td>• s9(2)(a)</td>
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<td>20b</td>
<td>27 Feb 2015</td>
<td>BRI-0497 attachment</td>
<td>Released in full.</td>
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<tr>
<td>21</td>
<td>26 May 2016</td>
<td>Automated compliance - background documents fyi</td>
<td>Released in part. Information withheld under:</td>
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<td>• s9(2)(a)</td>
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<tr>
<td>21a</td>
<td>26 May 2016</td>
<td>Auto Compliance Workstreams Overview</td>
<td>Released in full.</td>
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<td>21b</td>
<td>26 May 2016</td>
<td>Auto Compl Project Initiation v0-3 May 2016</td>
<td>Released in full.</td>
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<tr>
<td>21c</td>
<td>26 May 2016</td>
<td>Automated Compliance A3 May 2016</td>
<td>Released in part. Information withheld under:</td>
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<td>• s9(2)(a)</td>
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<td>22</td>
<td>25 Jul 2014</td>
<td>In confidence GPS material for review - Road safety</td>
<td>Released in part. Information withheld under:</td>
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<td>• s9(2)(a)</td>
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<tr>
<td>22a</td>
<td>25 Jul 2014</td>
<td>Draft Road safety input for GPS 2015</td>
<td>Released in full.</td>
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<tr>
<td>23</td>
<td>14 Jun 2016</td>
<td>FW Automated Compliance Strategy</td>
<td>Released in part. Information withheld under:</td>
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<td></td>
<td>• s9(2)(a)</td>
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<tr>
<td>24</td>
<td>24 Mar 2016</td>
<td>RE Road Safety</td>
<td>Released in part. Information withheld under:</td>
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<td>• s9(2)(a)</td>
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<tr>
<td>25</td>
<td>17 Apr 2015</td>
<td>Fwd New road safety advertising campaign Drink-driving</td>
<td>Released in part. Information withheld under:</td>
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<td>• s9(2)(a)</td>
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Hi everybody

Attached is the Agenda for Thursday’s meeting.

Ernst has also asked me to include these links:

NSW speed camera strategy (2012)

NSW annual speed camera review (2014)

If you can look through these documents before the meeting that will be very helpful.

At the meeting I will also table a working draft of a "workstream initiation document" for developing the strategic direction for automated compliance (see item 8 on the Agenda), for discussion.

Kind regards

Margaret

Margaret Dugdale Principal Advisor, Strategy Team
Strategy, Communications and Performance

Safer Journeys

Find the latest transport news, information, and advice on our website:
www.nzta.govt.nz

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not use any information contained in it. Legal privilege is not waived because you have read this email.
Automated Compliance Sector-wide Meeting

Thursday 7 April 1.00pm–3.30pm
New Zealand Transport Agency
National Office, Chews Lane
Room 2.32

Agenda

1. Welcome, apologies and introductions (Bruce Richards, Chair)

2. Confirm meeting objectives (see below)

3. Agree a working definition of automated compliance – possibly: “using technology instead of people to detect, record and process breaches of transport regulations”

4. Discuss background and current work:
   - Safer Journeys Action Plans (see p.2 below)
   - Police proposal for alternative management arrangements for speed and red light cameras
   - Speed Camera Expansion Programme
   - State Highway projects/network management needs
   - Others?

5. Agree proposed workstreams – number, scope, dependencies and leads – possibly:
   - Developing strategic direction and operating principles (NZ Transport Agency lead)
   - Alternative management arrangements for safety cameras (Police lead)
   - Oversight and co-ordination of current operational projects and issues (NZ Transport Agency via Safer Speeds programme, and linking to SH projects)

6. Identify key issues – e.g. legislation, funding, organisational roles, timelines, dependencies, ICT investment, stakeholder engagement and communications, evaluation

7. Agree sector governance arrangements – propose via NRSC and NRS MG

8. Discuss Draft Workstream Initiation Document for developing strategic direction (to be tabled)

9. Agree next steps
Proposed objectives for the meeting

- Gain a shared understanding of "automated compliance"
- Understand current state, work in progress and the drivers of change
- Agree on workstreams and next steps on each
- Start to develop an agreed sector wide vision and operating principles for the future of automated compliance
- Identify key issues and obtain feedback for strategy development work

Background information – Safer Journeys

Proposed "enabler action" from draft Safer Journeys Action Plan 2016–2020:

Develop an automated compliance strategy by the end of 2017 to take advantage of 21st century compliance technology.


<table>
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<th>Enhance Automated Enforcement</th>
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<td>Enforcement is a crucial part of improving compliance with speed limits and reducing death and serious injury through general and specific deterrence. Newer technologies such as red light cameras, point-to-point cameras, weigh-in-motion, automatic number plate recognition and traffic operations technology offer further opportunities for automated monitoring, risk assessment and enforcement — not just for speeding, but for a range of other transport issues such as safe and efficient freight movement. Another opportunity is to improve the effectiveness of current technology by removing operational or legislative barriers (e.g. demerit points on speed cameras). A multi-agency taskforce will pursue options for expanding the use of, and optimising investment in, automated enforcement technologies. The taskforce will investigate what technical, institutional, ethical or funding barriers exist to wider adoption and operation of automated enforcement as part of an integrated intelligent transport system. It will recommend which organisation(s) should own and operate automated devices in different situations and who should be responsible for particular functions such as prosecution, processing of notices and infringement fee collection, as well as audit and calibration of automated enforcement technology. Funding options could include hypothecation of infringement revenue for specific road safety initiatives. Automating enforcement has the potential to streamline processes and free up police officers to focus on other high-priority road policing activities.</td>
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For various reasons this action did not proceed and has been carried forward in slightly modified form to the 2016–2020 Action Plan.
Hi everybody

Agenda for Wednesday attached – please let me know if you would like to add any items.

Also attached:

- Notes to date from Transport Agency Literature Review. Please contact Siobhan if you'd like access to any paper not available online.
- Draft outline for sector discussion document – would like to focus on section 6 – principles and assessment framework.

Many thanks
Margaret

Margaret Dugdale / Principal Advisor, Strategy Team
Strategy, Communications and Performance

Find the latest transport news, information, and advice on our website:
www.nzta.govt.nz

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Automated Compliance Sector Meeting

Wednesday 15 June 2.00pm–3.00pm
Ministry of Transport

Agenda

Chair: Margaret Dugdale, NZ Transport Agency

Attendees: [Redacted] (Ministry of Transport), Shelley Tucker (Ministry of Transport), Robyn Gardener (ACC), Inspector Peter McKennie (NZ Police), Siobhan Bakker (Transport Agency).

1. Welcome, apologies and introductions
2. Notes from 11 May meeting (see next page) and any matters arising
3. Round-table: quick update from each organisation on relevant work or issues
4. Literature review – summary to date attached fyi and comment
5. Draft outline for Discussion Document – attached for feedback, particularly on section 6 – proposed principles and assessment framework
6. Next steps
7. Any other business
8. Date for next meeting

Withheld under section 9(2)(a) of the Official Information Act 1982
Notes from 11 May meeting

1. Apologies – Hannah Hyde (Transport Agency)
2. Round table:

Transport Agency – main focus on information gathering and planning

Ministry of Transport – limited resources in the Safety team but keen to see progress. **[Redacted]** will liaise with the Ministry’s technology team about sharing ideas and information. Interested in the regulatory issues. Will assist with briefing the Minister.

Police – hunger to use new technology, especially for CVIU functions. Regulatory framework needs updating. Look for opportunities to leverage off other systems e.g. the weighing systems at port exits could also be used to manage entry to the road network (safety and protection of network assets). Traditional officer-led policing is being engineered out of the network, so new technology needed and has the potential to be more efficient.

ACC – a business case is still open for investment in trial technology for road safety. ACC can also assist by partnering with local government RCAs. Opportunity to link automated compliance work with the national fleet safety partnership programme co-designed with industry (ACC lead supported by WorkSafe NZ and the Transport Agency). Page 13 of the Safer Journeys Action Plan 2016-2020 refers. Contacts are James Newton (Transport Agency) and **[Redacted]** Role of insurance companies also noted.

General discussion also noted:
- Emerging collision prevention technology (both vehicle to vehicle, and network to vehicle) – better to prevent than enforce
- Too many roads still have speed limits that are too high for the road’s design and function (address through Safer Speeds Programme roll-out)
- Scope for using other levers, particularly apps, to increase voluntary compliance
- Z is being proactive as a good corporate citizen with learner driver app (link to employment opportunities) and commercial vehicles (in-cab cameras and GPS as part of improving truck driver safety) [http://x.co.nz/about-z/health-safety-security-and-environment/a-view-from-the-tanker-cab/](http://x.co.nz/about-z/health-safety-security-and-environment/a-view-from-the-tanker-cab/)
- Minor amendments to the Land Transport Act in progress include Police being able to access photos from the Driver Licence Register.

3. Workstream Initiation Document V0.3
General agreement that this is good enough as a baseline to work from (thank you @). Can be updated if required.

Comments: p.7 under 2.1 Problem Statement – note that supporting initiatives to reduce the number of young drivers entering the criminal justice system via traffic offences is important for whole of government p. 10: 6.2 exclusions – note that alcohol interlock issues are being addressed separately. (Increasingly vehicles will have this technology built-in).

General agreement with the phases and timing. The NRSC Ministers will need to be briefed before the key stakeholder engagement (mid-July).

TRAFINZ Conference in November would be a good opportunity to raise awareness across the sector.

Implications of options will need to be discussed with Ministry of Justice and Corrections.

5. Literature Review &

6. Stocktake/current state assessment
As discussed – please send any links, articles or reports that you think would be useful to Siobhan and me, or send the contact details of people we should talk to. Siobhan will also circulate weekly links to information and compile a summary table of resources to inform the strategy development. Thank you to Robyn for offering to coordinate and collate ACC input.

withheld under section 9(2)(a) of the Official Information Act 1982

7. Communications & Engagement
The Transport Agency will start development. Noted that [REDACTED] is the Police communications contact.

8. Next meeting
Monthly meetings probably sufficient with frequent e-mails to share information and ideas. Next meeting provisionally scheduled for Wed 15th June at 2pm, Thank you to MoT for providing the central venue for the time being.

Please reply to all if there are any additions or corrections to these notes. FYI I'm also attaching the article we referred to about camera developments that would facilitate detection and enforcement of offences such as cell phone use and not wearing seatbelts.
Literature Review: Automated Compliance

- New and emerging technology to automate compliance and enforcement functions
- Compliance functions include improving safety and efficiency on the network
- Relevant compliance functions should deliver greater cost effectiveness
- Relevant jurisdictions are Australia, Canada, USA, EU, Singapore

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Government’s Roads Investment Strategy future vision is by 2040 the network will be smoother, smarter and more sustainable. Deepen relationship with vehicle manufacturers to gain insight into drivers of vehicle design - will help to understand how we might provide incentives for more rapid uptake of safety features such as radars or in-lane technology.

Participate in the pilots of automated vehicles in England - explore how information is transmitted between RCA and driver via personalised devices rather than roadside technology.

Concept of operations does not dictate list of projects to be delivered, it establishes a holistic picture of the operational system (the Strategic Road Network). This sets the direction that enables staff, suppliers and partners to understand where they can make improvements to its services to meet the needs of customers. Treating customers with consideration and not just as 'road users' through four areas of operation:
- How we influence demand through informing customers via their preferred format in a timely manner
- Improving network availability through reduced impact of incidents, smart road work planning, education and information sharing
- Optimise network utilisation through smart motorways, smarter and connected vehicles (ITS) - squeezing every drop of capacity
- Improve understanding of the impact of what we do on demand, availability and utilisation of the network; ensuring intelligence based and well informed interventions are performed.

While encouraging the market to lead innovation, we will demonstrate an overriding long term objective to reduce roadside technologies, eg encouraging personal in-vehicle services, resulting in reduced capital and operational costs and impact on customers and communities.

We will support intelligence-led initiatives to cover enforcement, compliance and road user information. Includes willingness to upgrade enforcement cameras to digital, providing additional hot speed or average speed cameras on high risk routes, reinvigorating a programme of intelligence-led encouragement campaigns and considering the roll-out of more incident prevention and detection technology.

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<tr>
<th>Can We Banish The Phantom Traffic Jam?</th>
<th>BBC Autos <a href="http://www.bbc.com/autos/story/20160428-how-ai-will-solve-traffic-part-one">link</a></th>
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The ITS domain has addressed and developed a number of specific applications. However, models for data sharing and cost efficient data collection should be considered (in this instance, discussion is related to urban freight). Legal expertise related to privacy and competition issues is necessary. Policy context reflects a focus on multiple uses applied to the suite of technical solutions and the data they gather:
- Promoting integrated policies, in particular the role of Sustainable Urban Mobility Plans (SUMPS)
- Focussing on citizens - in terms of accessible transport systems and passenger information and services
- Greening urban transport - low carbon vehicles/low emission driving styles
- Strengthening funding - looking primarily at pricing mechanisms
- Sharing experience and knowledge - through data, statistics, research and demonstration projects
- Optimising urban mobility - looking at urban freight and ITS.

Data privacy aspects, payment allocations and the role of organising bodies with regard to international use of public transport ticketing systems should be clarified. This area of research should cover equity, institutional and market organisation issues rather than pure technical or economic issues. Priority research gaps include collisions and safety. "Collision rates have been dropping in Europe, but safety is still a key driver of transport policy and research."

The report notes improvements in passenger-centred transport policy and research, challenges to be faced now are modularity and standards for vehicles and cargo units in the freight space, and in collaborative logistics (ie: access restrictions, time windows for city deliveries, taking account of short term regulatory issues and sustainable urban mobility plans. A further positive impact could be reduced costs of last mile delivery).

In 2012 the EU Commission published a roadmap for completing the single market for parcel delivery; increased transparency and information were the intended outcomes of the envisaged main actions. This 2016 report adds greater emphasis to additional benefits of enhanced interoperability for freight forwarders and their customers and more effective solutions for parcel returns.

ITS research - real challenge to identify options with transferability to maximise the effects of research; examples provided:
- Cooperative Mobility Systems and Services for Energy Efficiency (eCoMove 2010-2013) aimed to develop core technologies and applications based on V2V and V2I communication, where vehicle eco-relevant data can be shared in real time with other vehicles and traffic controllers as a basis for fuel-efficient driving support and traffic management.
- Co-GISTICS 2014-2017 is deploying various ITS services for urban freight logistics ie: intelligent parking and delivery areas to optimise vehicle stops along a delivery route, and support for truck drivers in adopting more energy efficient driving
- Intelligent Cargo in Efficient and Sustainable Logistics Operations (iCARGO 2011-2015) aimed to advance and extend ICT to support logistics that synchronise movements and operations across various modes and actors, adapt to changing conditions through dynamic planning methods involving intelligent cargo, vehicle and infrastructure and combine services, resources and information from different stakeholders taking part in an open freight-management ecosystem. This project designed a decentralised ICT infrastructure that allows planning services and existing systems to co-exist and efficiently co-operate at an affordable cost for logistics stakeholders.

The individual end user is key to successful ITS projects, according to the Urban ITS Expert Group 2013e. Irrespective of the mode of transport, a problem not solved by ITS applications for the end users so far is the level and the personalisation of information provision. The report says that "to impact user behaviour a certain ways, different users need to be addressed in different ways. Respective psychological research (eg: in combination with hazardous events) could be covered by future research programmes." The report strongly recommends that urban intelligent transport systems
future research should cover customer satisfaction, equity, institutional and market organisation issues and not just pure technical and economic issues.

**National Weigh Right Implementation TOR**

**NZTA**

Using bridge Weigh in Motion (WIM data) and Automatic Number Plate Recognition (ANPR) to reduce the impacts of illegal overloading of heavy motor vehicles.

Desired outcome is a greater level of compliance within the road freight industry.

To be undertaken by NZTA and Police CVIU through enhancing capability of existing sites. New sites will be selected where they will maximise effectiveness in detecting non-compliant vehicles (enforcement) and encourage compliance.

HPMV cannot be commercially viable for operators if others are carrying heavier loads illegally without paying their share of RUC. This creates uneven competition with compliant operators and increases infrastructure damage.

The Agency must have certainty and consistency in the way it responds to operator compliance. This requires regulation and policy development with well understood processes:

- Defining the enforcement outcome - increase the level of compliance
- Define the national framework / process for how A&U will respond and act on the outputs / operator corrective action
- Determine the procedure and actions for data collection, data management and usage, RUC review including monitoring and reporting of outcomes
- Develop and agree related targets by relevant agencies - mainly HNO and CVIU and A&U as KPI measures
- Develop a process for vehicle checking and sharing data with Police on illegally overloaded vehicles.

Systems and technology integration to consider connectivity between roadside devices and data repositories, data integration for management/lifecycle and technical approach to ensure reliable, timely availability, and take into account privacy in relation to systems and storage of information.

Architecture to support technology requirements for roadside setups, cameras, infrared lighting, and quality of service for priority traffic and bandwidth needs / restrictions must be determined.

Systems interface with other systems and databases to be determined ie: overweight permits, LANDATA and Traffic Offence History.

**Review of the Vehicle Dimensions and Mass Rule**

**NZTA**

**Discussion Document Dec 2015**

Purpose is to improve safety and community well-being through encouraging freight and passengers to be carried by safer vehicles; improve vehicle operator compliance; optimise the use of NZ’s road network. Approaches to compliance are risk based.

VDAM Rule in place for 13 years, with 11 amendments in that time. While generally working well, requires change if it is:

- Meet projected increases in land-based freight and passenger transport demand
- Take advantage of on-going innovation in technology design and use
- Provide agile regulatory platform that can systematically meet economic growth while ensuring NZ’s road assets are maintained
- Meet government’s commitment to Better Public Services and better quality regulation
- Be consistent with governments’ Safer Journey’s commitment to improvements in road safety.

Preferred approach is to allow general access for a high proportion of the heavy vehicle fleet and only require permits for a small proportion of the
freight and other transport tasks. A small number of issues relating to compliance and enforcement can only be addressed through amendments to the Land Transport Act.

The Rule review will be informed by other work:
- A review of performance based standards that a vehicle must meet while allowing operators and manufacturers to determine how to configure a vehicle to meet those requirements - TERNZ leading and will discuss with industry stakeholders
- Proposals for assessment of pavement impact from increased axle loads by Infrastructure Decision Support.

VDAM Rule currently limits the gross mass of a vehicle or combination of vehicles to protect the main structural elements of bridges and other structures and limit the mass on axles and axle sets to protect roads from excessive wear and damage as well as bridges. Limitations that the Rule may be placing on stakeholders:
- Network underutilisation if limits are too conservative
- Needs updating to reflect changing vehicle and tyre design
- Technologies such as air suspension and electronic breaking result in reduced impacts on roads
- Over-complexity of tables in Schedule 2 of the Rule - could be simplified especially in relation to multi-axle sets.

Improvements in efficiency through increased carrying capacity means the same freight task could be completed with lower VKTs. Actual crash risk expected to reduce due to fewer VKTs and heavy vehicles on the road, while having a positive impact on congestion. However increased mass means consequences of crashes when they do occur would be greater.

The current Rule prescribes a general maximum width of 2.5m for all vehicles and their loads. Exceptions are for load securing devices, and tyre bulge, to create a maximum on road width of 2.55m some specific width limits for additional vehicle parts such as grab-rails. Current width restrictions limit the choices for vehicle operators, with major exporters of truck and bus chassis moving to greater widths (Europe allows 2.55m generally and 2.6 for refrigerated box bodies and USA allows 2.6 for all vehicles). Most vehicles with a body width of 2.55m are equipped with better safety technology (eg: electronic braking) and generally have better emissions technology. If maximum width was extended to 2.55m it would be possible for box bodies to be built to the existing 2.5m width, but with door hinges extending to the 2.55m maximum (as a cheaper option when the additional width is not required for the freight task). This could create a potential hazard for cyclists and pedestrians, especially in relation to vehicles with low-floor bodies but this could be overcome by specifying in the Rule that box body hinged are required to be flush with the body's walls irrespective of overall width. Collision detection systems and lane departure warning systems are technological measures that have direct relevance. An increased allowable width could encourage an increase in European motorhomes being operated in New Zealand. Most of these have doors opening to the right - therefore into traffic on New Zealand's roads. Regardless of allowable width this issue should be addressed in this Rule (or another Land Transport Rule). Analysis on heavy vehicle stability.Vs. crash rate indicates a 7% improvement in stability when 2.6m limits are used, however there do not appear to be stability issues for 2.55m units. Any increase in maximum allowable width could cause an increase in crash risk because of reduced separation between vehicles, offsetting any potential benefits of increased stability. An increase to 2.6m could mean swept width on some parts of the network would be dangerous and require re-engineering; for an increase to 2.55m there should be no issues with 'network fit'.

Detail for overweight and over height dimensions also provided, and around the permitting system itself - in re-writing the Rule, processes and terms will be considered that avoid the potential for limiting the uptake of new technologies to monitor, administer and enforce the system that enables transport network access for heavy or oversize/weight vehicles.

| Passenger Compartment | IEEE Transactions on Intelligent | High Occupancy Vehicle (HOV) lanes and High Occupancy Tolling (HOT) lanes are lanes that are enabled by ITS (sensing, computational power and advanced communications into the transportation |
Violation Detection in HOV/HOT Lanes

USA
https://infohub.nzta.govt.nz/dtc/csdill?func=ll&object=overview&objid=15517440

infrastructure (ITS)). They combine traffic management, tolling transit and carpooling in a multi-purpose roadway, creating new options for agencies and the traveling public and use congestion pricing to more efficiently manage demand and generate revenue. To realise the benefits of these lanes the rules relating to them need to be enforced. Current practice requires dispatching law enforcement officers at the roadside to visually examine incoming cars; an expensive, difficult and often ineffective method. Typical violation rates can exceed 50%-80%, while manual enforcement rates are typically less than 10%. An Automatic or semi-automatic approach to replace and or augment this manual enforcement is sought by RCFAs. Additional enforcement opportunities include using imaging systems to detect cell phone use or failure to use seatbelts while driving.

Explored in this paper:
- The law enforcement need to observe arbitrary vehicles using near infra-red (NIR) cameras installed roadside or on gantries and comprehend the various view and environmental variations (as opposed to co-operative vehicle technology that is contained in the vehicle and optimized for that vehicle)
- Deformable part model (DPM)- based windshield detection extended to side windows
- A framework for occupancy detection using front and side view images
- A Classification-based seat belt violation detection method is presented - and compared with a DPM-based line detection method
- Describes an automated region of interest detection for each violation based on landmark locations
- Provides experimental results, including evaluation of methods using real-world road images.

Face detection methods are unreliable under occlusion with arbitrary face poses especially for images captured from the side. Various other techniques that can distinguish skin colour over seat colour for cell phone use detection or seat belt wearing are also considered unreliable or inappropriate. This is due to those methods aiming to detect straight lines with a certain orientation in the image or use other processing methods - all are reliant on cooperative vehicle camera technology.

Strong technical detail and referencing. Using the HOV/HOT imaging system, a roadway dataset of over 4000 images was collected. A large variation in image intensity due to variations in windshield and window transmittance, illuminator state, sun position, cloud position and various other factors even though images captured by an NIR camera. The methodologies outlined show how to comprehend these challenges to reliably locate a region of interest and perform the classification task for detecting passenger compartment violations.

Discussion around localizing front windows and side windows from other trapezoid shapes in an image - windshield model learning that captures wing mirrors as landmarks. Facial recognition exploits multiple landmark points.

Technical discussion around aggregating descriptors to create image level vector signature, based on existing extensive usage and success in image classification and categorization tasks.

HOV system can be used to inform officer on site who makes a decision to process enforcement ticket, or offline in which the system makes a decision after the fact at processing centre. Importantly, while the system offers to significantly reduce human involvement required for HOV/HOT lane enforcement, in practice a human is often required in the loop to avoid serious public relations problem of issuing improper citations.
<table>
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<tr>
<th>Heavy Vehicle Compliance Review Final Report June 2014</th>
<th>National Transport Commission Australia</th>
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</thead>
<tbody>
<tr>
<td>Ability to make educated decisions about the motivation of regulated parties relies on sufficient, timely and accurate information. Value of an intelligence based system is founded in the ability to target resources to higher risk offenders as well as identify compliant operator and allocate incentives.</td>
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Necessary for the broader work to be delivered:
- NTC developing National Data Strategy - this is critical for collecting, assessing and leveraging intelligence to enable differentiation between operators and other parties.
- Intelligence Sharing Protocol would be needed to facilitate appropriate data collection; Protocol to be developed by National Heavy Vehicle Regulator (NHVR) in consultation with relevant stakeholders.

The Heavy Vehicle Compliance Review is a consequence of the Heavy Vehicle National Law bringing together compliance and enforcement tools to be utilised on a national basis. However, Western Australia and Northern Territories have not adopted the HVNL so remain outside of its effect. The NHVR enables coordinated compliance and enforcement tools across particular jurisdictions.

The probability of detection and punishment is more likely to drive compliant behaviour than the severity of the punishment.

Some discussion around reasons for non-compliance and requirement for sound data to be collected to enable agencies to determine what the underlying driver for the non-compliance was and therefore the appropriate action to be taken.

Discussion around appropriate responses - educative/persuasive intervention or enforcement/punitive response.

Discussion around impact of publishing data on enforcement activity and outcomes. May encourage self-regulation for law abiders and remind opportunistic non-compliers of the reality of risk of prosecution. The high profile of some enforcement can impact the reputations of operators - and so a deterrent and can provide lessons on the standards of compliance. Stakeholders feedback during the review was supportive of publication.

Some concerns around additional costs and resource demands, particularly from the Northern Territories.

Perceived weakness of HV accreditation scheme - for instance some participants found they were more likely to received defect notices for maintenance accreditation that operators not accredited. Issues also with roadworthiness survey, Problem is found in auditors being over lenient in some instances or some operators re-commissioning audit when initial reports are not in their favour. Potential conflicts of interest could have existed however no auditor’s authority has ever been revoked. The return of direct control of NHVAS auditing function may provide enforcement agencies with sufficient confidence to honour the original policy intention.

Infringements can be perceived to be unfair if based on genuine error (eg logbook mistakes). Perception exists that they offer soft approach and avoid targeting the systemic chain of responsibility issues. Accusations of infringement system being a revenue gathering mechanism - can be quantifiable demonstration of productivity, which report says will need to be addressed.

Some drivers and operators see infringements as having no safety or equity purpose - this reduces behavioural impact of enforcement tools; self-regulation may decline.

<table>
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<tr>
<th>Regulatory Barriers to ANCAP submission</th>
<th>Discussion around key regulatory issues facing automation in new vehicles - relevance in terms of</th>
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More Automated Road and Rail Vehicles Issues Paper to the NTC Australia April 2016


- removing the requirement for direct interventions by RCAs by mitigating the opportunity for such occurrences in the first place, and also for potential to leverage incoming ‘opt-in’ technology that could potentially assist the viability of on road detection and enforcement technologies.

ANCAP provide independent and transparent advice to consumers and information of the level of occupant and pedestrian protection provided by different vehicle models and their ability - through technology - to avoid a crash.

ANCAP has a key role in educating consumers about new car technology and its promotion and building community confidence in the technologies.

Future of improving vehicle safety lies in technologies that can remove human error believed to be a factor in over 90% of road crashes. The ANCAP rating programme will be updated by 2018 to assess autonomous technologies. These will include Autonomous Emergency Braking Systems, speed assist systems, traffic sign recognition and digital map data management and lane support systems.

Australian average vehicle fleet age is 10.1 years. Vehicles with autonomous technology will continue to mix with older vehicles for many years to come; high levels of occupant protection must continue to be required for new vehicles.

At this point technologies that support the driver without entirely replacing the driver are being encouraged. They would be considered partially or conditionally automated under the proposed definitions of the levels of automation. Although available in Europe currently they are not available to the same degree in Australia.

Automation should be considered in terms of regulation and liability and not only in relation specifically to transport. Where possible, the adoption of internationally consistent practice is recommended. Potentially, particular roads or zones that may be capable of supporting various levels of automation may then also be classified under internationally consistent definitions.

Introduction of autonomy will be assisted by governments agreeing to national consistency on infrastructure such as speed signs, traffic signs and signals and line and lane markings to support the technologies.

Article 8 of the Vienna Convention, explanatory note: "the systems are not intended to overrule the decision taken by a sane, accountable driver"; ANCAP considers appropriate and cites aviation as an example - licenced pilot responsible for craft even when in autonomous mode.

Location mapping updates to prevent outdated speed/location data to grow confidence in the speed zone recognition system of a vehicle; data recording of critical incidents also suggested for inclusion.

Safety standards for autonomous vehicles should include heavy vehicles.

Take note of the manner in which autonomy has been managed for aviation and shipping.

ANCAP supports position of Australian AA in recommending that motorists should not be prevented from accessing the data generated by their vehicles or prevented from choosing providers of ancillary services.

Using GIS to interpret automated speed


When implementing guidelines for automated speed enforcement (ASE), most descriptions of deployment goals are so qualitative that they might have multiple qualitative interpretations. This
enforcement guidelines and guide deployment decisions in mobile photo enforcement programs 2015

affects the identification of specific deployment considerations. Limited research has been done to improve the process by which guidelines are implemented. A better understanding of the governing ASE guidelines and how to implement them can help enforcement agencies in improving decision-making and resource allocation to increase programme effectiveness and efficiency.

This paper proposes quantitative measures for an ASE programme to facilitate interpretation of the main ASE principles and improve deployment decisions. High priority deployment considerations are illustrated through a case study in the city of Edmonton in the province of Alberta, Canada. The case study explores the deployment outcomes of the mobile photo enforcement (MPE) programme in Edmonton. Six priorities are identified in the provincial enforcement guidelines and two performance measures - spatial coverage and enforcement intensity - are assessed for priority sites and non-priority sites. The distance halo effects of MPE are considered in this review of spatial coverage. All findings are visualised using Geographic Information Systems.

The research quotes WHO and OECD figures around global road transport fatalities that are due to speeding and discusses how the implementation of speed management programmes has become a high priority for many governments around the world. A review of studies from around the world, dated late 1990's to early 2000's shows that automated speed camera systems significantly improve traffic safety - adopting an ASE programme may lead to a 2-15% speed reduction and a 9-50% decline in collisions.

Guidelines provide general descriptions of how ASE should be deployed to achieve objectives of reducing speed and collisions, but they do not specifically define how site identification and ASE deployment should be conducted. Local enforcement agencies must rely on their own interpretations during the design and implementation phase - the potential benefits of using the guidelines may not be entirely realised.

Main guiding principles are examined, taken from ASE guidelines published by local provincial or national governments in the US, Canada, Australia and the UK. These are applied to six considerations for enforcement attention that are most commonly addressed in deployment guidelines - high collision sites, high speed violation sites, school zones, construction zones, high pedestrian volume sites and sites with community speeding complaints. Commentary around the implementation practice across the jurisdictions is provided - some insight into the availability of relevant data is included.

High collision sites and high speed violation sites were considered highest priority, determined by a variety of methods outlined in the paper. Lower priority sites included school zones, pedestrian zones, construction zones and sites with community speeding complaints. By providing visual graphics of the MPE programme coverage, enforcement agencies can observe which sites identified as non-priority sites still received enforcement attention - over 30% of the total. It is possible that greater safety outcomes could be realised from reallocation of the locations chosen. Spatial coverage can also illustrate which sites have multiple priority alignment therefore enabling enforcement agencies to allocate investment in improving management of limited resources through dedicated effort to locations with particular priorities.

Technical methodology provided for accounting the coverage and distance of the halo effect to maximise upstream and downstream safety effects of the camera site. This is applied and visually graphed for some high priority deployment programmes across some example cities using actual results. When accounting for the halo effect, deployment of camera sites at locations that are amenable to camera placement but not perfectly aligned to high risk sites, still offer considerable benefits along the related corridors. The level of enforcement intensity is improved when accounting for the distance halo effect. The paper recommends that until further testing and application of the methodology for measuring the halo effect is conducted and good results are replicated in further studies, high priority sites should still be specifically targeted for MPE locations.
<table>
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<tr>
<td>Active traffic management (ATM) systems are becoming increasingly important to combat recurrent and non-recurrent congestion, improve safety and mobility and reduce emissions, noise and fuel consumption. Variable Speed Limit (VSL) systems are increasingly deployed as a tool to support activities to deliver these benefits.</td>
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<td>In the past most VSL systems in Europe have included automated enforcement as part of the system, while in the US authorities have relied on traditional speed enforcement strategies. In the Portland Oregon metropolitan area a new traffic and weather responsive VSL system has been deployed that uses variable advisory speeds (VAS) allowing law enforcement to rely on the basic rule for enforcement.</td>
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<tr>
<td>With the availability of archived high-resolution intelligent transport systems (ITS) data, it is possible to conduct post hoc analysis after VSL deployments. As part of on-going evaluation of the Portland VAS system this paper focusses on the driver compliance with the displayed VAS message. Compliance is defined as the difference between the displayed speed and actual measured speed of traffic. In addition to analysing more than 35 days at the Portland site analysis of a VSL site in Munich, Germany has been undertaken to provide a comparison. The research is useful for understanding the benefits of these ATM strategies assist with targeting enforcement actions and gain understanding of when to deploy VSL/VAS systems.</td>
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Methodology utilised primary data sources from 20-second radar and loop detector data (count, occupancy and time mean speed) and 2-minute VAS sign data (location, lane, advised speed or warning message).

To analyse ground truth traffic situation compared with displayed VAS speeds the database of sensor data was compiled in one-minute segments, combining volume and speeds across lanes of northbound OR 217 per location and paper time. Subtracting the speeds of the vehicles traveling with the advisory sign speed yielded compliance graphs. These graphs show the difference in speeds of the vehicles from the VAS signs.

To compare the Portland advisory speed limit system with another VSL, a site in Munich, Germany is also analysed. The Munich site used regulatory speed limits and includes an automated enforcement system although it is unknown if/when enforcement was performed by law enforcement on OR 217 during the study period.

Graphical display of VAS limit performance on the OR 217 (Oregon) and the VSL on Autobahn 99 (Munich) details specifics of each system while in use.

**Conclusions:**
- Vehicles in congestion may not have the ability to comply with the displayed VAS speed limits
- Compliance rates are higher on the on the A99 in Munich due to the automated enforcement at each VSL gantry
- Evaluations of VAS system influence on traffic is necessary for increasing potential of the system
- Making sure that 'ground truth' data is closely reflected within a tight time-space window is crucial to maximising system effectiveness
- Further investigation into the detection - VAS - response - driver compliance loop is needed to maximise the full potential of the VAS systems
- Future analyses should attempt to include confounding effects such as incidents.

**Influence of traffic** | Predrag Stanojevic, | Police enforcement is an important means of improving traffic safety. Numerous articles and studies are
enforcement on the attitudes and behaviours of drivers

Dragan Jovanovic and Timo Lajunen

http://ac.els-cdn.com/S0001457512004411/s2.0-S0001457512004411-main.pdf?_tid=2eab e68c-2edd-11e6-ae61-00000a0b0f6c&acdnat=1465429752_59f 15066f7d3e24604bafa8d7ae0

Serbia, Turkey, Norway, 2013

outlined that link improved outcomes for safe speeds, reduced drink driving and greater seatbelt use during active police enforcement with halo effects noted around enforced routes and continuing for weeks after intensified enforcement programmes have ended.

Research also confirms that while increasing the amount of police enforcement resulted in reduced speeding, stricter sanctions affect driver's choice of speed only marginally. Law change alone may have immediate improvements but over six to twelve months these may reduce, although not to pre-law change levels. Seatbelt uptake is greatly improved with legal change backed up by police enforcement.

Countries that have long traditions of enforcing drunk driving laws, low legally permitted blood alcohol concentrations and relatively high objective of risk detection and enforcement supported by mass media, have the lowest number of cases of driving under the influence of alcohol.

Some studies claim no significant relationship between enforcement and traffic crashes and behaviour. These mixed results could be due to several methodological differences. Data must be presented that indicate the number of traffic crashes and fatalities and the degree of enforcement in the system. Lack of data makes it difficult to interpret real levels of enforcement and impossible to define the optimal level of enforcement. Research literature seems to suggest that the effects of increasing traffic enforcement can only be achieved within restricted areas that are in the foci of enforcement experiments but not at a national level.

Road users tend to modify behaviour only in enforcement areas or where they anticipate risk of being punished. Unless the intensification of enforcement is tripled, it has little or no effect on the subjective risk of getting caught according to some studies. Two studies are outlined that captured varying trends in behaviours and outcomes during a police strike in the USA (no obvious change in frequency of crashes, property damage, personal injury or fatalities) and Finland (slight increase in mean speed but percentage of speed violations 10km over the limit rocketed from 50% to 100%, standard deviation of recorded speeds rose by 20%, which suggest crash risk was also elevated).

The aim of this study is to identify if prolonged lack of enforcement of traffic laws - as opposed to temporary suspension of enforcement - affects driver behaviour and attitudes.

Since the NATO intervention in Yugoslavia in 1999, traffic enforcement in Northern Kosovo in the disputed region of Kosovo, has essentially been absent for 13 years. Over the border Serbia has the same institutions, political, health care and education systems however law enforcement is implemented and carried out by international forces and Kosovo Police.

Methodology is outlined with discussion on responses - essentially self report to capture perceptions, respondents perceived behaviours, and then series of field observations to test speeding, use of seatbelts and head lights on during the day as required by law in both jurisdictions.

Conclusions confirmed that drivers in Northern Kosovo engage in significantly riskier driving behaviours than drivers in Serbia. Drivers in Northern Kosovo drive faster, exceed speed limits more frequently, use seatbelts less frequently, drive after exceeding the limit for alcohol more frequently and are more often involved in risky or near miss situations. Lack of enforcement seems to influence attitudes towards speeding and violation of other regulations; there were generally similar beliefs about what 'good' or 'bad/unsafe' behaviours are across the two jurisdictions but a strong difference
between actual behaviours.

Several types of risky driver behaviours were introduced into the study as independent variables - they have different causes and are based on different psychological mechanisms so require different control mechanisms. Difference in etiology of these behaviours must be taken into account in implementation of the measures that are designed to change the behaviour and attitudes of drivers. Drivers across the jurisdictions seem to support the application of newer technologies in enforcement of traffic laws (eg speed cameras, speed limitation devices and devices to help prevent driving while under the influence). Therefore it is likely that those devices would be well received and result in significant improvement in traffic safety in Northern Kosovo.
Draft outline for Automated Compliance Discussion Document

Foreword
[NRSC]

Summary
What is automated compliance?
Safer Journeys context
Taking a whole of land transport system approach
Where we are now
Trends and opportunities
The challenges
Proposed principles for developing an automated compliance strategy
Roadmap – priorities for investigation

1. New Zealand current state assessment
What is automated compliance?
How does it relate to Intelligent Transport Systems?
How is automated compliance being used in New Zealand now? Speed and redlight cameras, e-RUC, weigh-in-motion
Benefits so far
On the horizon/in the pipeline – Smart Motorway (variable speed limits), Waterview Tunnel (point-to-point [maybe], height restrictions), other
Organisational roles and responsibilities – NZ Police, NZ Transport Agency, Ministry of Transport, Ministry of Justice

2. International developments summary
Australia, United Kingdom, EU, Singapore, USA, Canada, other
Range of technologies in use or planned
Evidence of effectiveness
Lessons learned/Issues/challenges so far

3. New and emerging technologies summary
Cameras
Blue tooth
Radio Frequency Identification Devices (RFID)
Other road or roadside sensors
Electronic display of vehicle licence/WoF/CoF/RUC
Automatic Number Plate Recognition
Interlocks
Mandatory in-vehicle systems e.g. Intelligent Speed Adaption
Smartphone applications

4. Potential benefits of automated compliance in relation to selected network safety and efficiency risks

Using automation to manage selected risks more effectively - an overview of the current approximate extent and impact of non-compliance and the availability of automated compliance technology for the risks below:
- Speed - potential from Speed Camera Expansion Project and point-to-point cameras
- Redlight/other signal compliance
- Lane management (variable lane closures, designated lanes for public transport and/or high occupancy vehicles)
- Vehicle dimensions and mass
- Seatbelt wearing
- Mobile/smart phone use
- Alcohol and drugs
- Warrant of Fitness and Certificate of Fitness
- Vehicle licensing
- Driver licensing and compliance with GDLs
- Work time rules and other occupational health and safety risks
- Road and rail - level crossings
- Parking
- Further out: environmental compliance? Other?

5. Vision and goals [outcomes sought]

For further development:

By [2030] Intelligent Transport Systems will underpin transport management in New Zealand. Automated compliance systems will be a fully integrated part of ITS. They will form a key part of system design together with measures such as infrastructure design, in-vehicle features, road user education and incentives to promote both safety and efficiency.

6. Proposed principles and assessment framework for automated compliance investment

Principles to guide use of automated compliance

Review and build on:
• The Principles of Our Approach [NZ Transport Agency’s position statement on intelligent transport systems, p.2 and p.12]

**Ideas for principles:**

Use of automated compliance must:

- Address a significant road safety or network efficiency risk
- Have the potential to significantly improve relevant outcomes
- Be consistent with the Safer Journeys strategy and the Safe System approach to road safety
- Be integrated with other measures to address the identified risk
- Be more cost-effective than other means of enforcement
- Use proven and reliable technology to meet standards for evidence
- Be consistent with Privacy Act and NZ Bill of Rights Act requirements
- Be broadly acceptable to relevant customers and stakeholders
- Other??

**Proposed Assessment Framework (carry out before deciding whether to develop business case?)**

For each selected risk/proposal to introduce automated compliance assess:

- current levels of compliance
- cost of non-compliance
- cost of compliance activity
- available and emerging technologies
- indicative investment required for automated compliance (capex and opex)
- potential benefits
- risks
- regulatory issues
- assess high/medium/low priority for further investigation
- Other??

7. **Developing a road map/prioritisation criteria**

Two immediate priorities from initial work [do you agree?]
• Point-to-point speed cameras
• Vehicle dimension and mass compliance

What work needs to be done to identify the next most significant opportunities? What additional selection criteria might be needed?

8. Regulatory Framework

Land Transport Act 1998 and regulations
Land Transport Management Act 2003
Privacy Act 1993
Issues/barriers and opportunities

9. Institutional Arrangements - roles and responsibilities

Ministry of Transport
New Zealand Police
NZ Transport Agency
Ministry of Justice
Local Government
Issues/barriers and opportunities

10. Have your say

Develop key questions for sector feedback.

References etc.
HI everybody

Thank you for a great discussion and constructive feedback on the first cut of the Project Initiation Document today.

I have updated the draft as attached (changes highlighted in yellow) to capture the main comments. Your further feedback is most welcome & no doubt there will be some points that I missed.

Lisa & look forward to hearing about who would like to be involved in this work and will organise a meeting later this month to progress.

Also here is a link to the Murray King article on Zero Harm that Leo mentioned:

https://www.cilt.co.nz/Section?Action=View&section_id=49

Best regards

Margaret

Margaret Dugdale / Principal Advisor, Strategy Team
Strategy, Communications and performance

Find the latest transport news, information, and advice on our website:
www.nzta.govt.nz

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Workstream Initiation Document

Automated Compliance: developing strategic direction and operating principles

V0.2 April 2016
Document preparation

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<td>Dave Trappitt, Acting Assistant Commissioner, Road Policing and Prevention</td>
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<td>Superintendent Steve Greally, National Manager Road Policing</td>
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<td>Leo Mortimer</td>
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<td>Brent Johnston</td>
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1. BACKGROUND

1.1 Workstream Purpose

The Safer Journeys Action Plan 2016–2020 contains the following action:

Develop an automated compliance strategy by the end of 2017 to take advantage of 21st century compliance technology.

This document provides the terms of reference for the workstream to develop the strategic direction and operating principles for automated compliance.

1.2 Definition of automated compliance

Proposed working definition:

"Using technology to guide behaviours and manage risks as part of developing a safe and efficient land transport system" – further feedback welcome

The most widely known application is speed cameras – initially enforcing speed limits at a particular point, but in future point to point cameras will also be used to monitor average speeds. Other means of detection besides cameras are within scope e.g. Radio Frequency Identification (RFID) or weigh-in-motion machines.

Police and Auckland Transport currently operate a few red-light cameras, using the same camera types as for speed compliance.

In some jurisdictions, automation extends to the issuing of infringement notices directly on receipt of information that an offence has occurred. In New Zealand Police manually check that standards for the issuing of a notice have been met before notices are issued.

Other transport risks that are or could be suitable for automated compliance systems are:
2. WORKSTREAM DEFINITION

2.1 Problem statement

New Zealand does not have a strategy to advance and optimise the use of automated compliance systems to enhance the safety and efficiency of road transport.

The following points are noted from the relevant working paper prepared as part of the development of the 2016–2020 Safer Journeys Action Plan:

- New roads, particularly new sections of State Highway and motorways, are now being engineered in such a manner that Police cannot effectively enforce on them.

- There is a desire to increase speed limits to 110km/h on some sections of the network that have appropriate levels of engineering. The engineering features that make these sections of road safer also make enforcement extremely difficult.
• New fixed speed cameras are being rolled out; however these have limited effectiveness in a motorway environment, with risk-taking drivers slowing down just where the camera is located and otherwise travelling at high speeds.
• Point-to-point cameras are a logical solution for roads of this nature, as well as having an element of fairness for the public in how excess speed is determined. Further, it would be ideal to put the infrastructure in place to support point-to-point cameras as the new roads of national significance are being built.
• Motorcyclists continue to be over-represented in fatal crashes. Front plates on motorcycles, to enable speed camera enforcement, have not been progressed for practical reasons. However, technical solutions such as dual-facing cameras are available.
• Three dual purpose digital red light/speed cameras are now operating. Road controlling authorities would like more of these cameras to address death and serious injury risks at intersections.
• Fifty tonne plus vehicles have been introduced to the network, posing increased risks to road safety and the network infrastructure, in addition to efficiency and economy risks if these vehicles crash as a result of non-compliance. Upgrading weigh-in-motion technology to the level required for Gazetting as an approved traffic surveillance device, and adding cameras for vehicle identification would promote increased compliance.
• Automated Number Plate Recognition (ANPR) can efficiently and effectively identify vehicles that are non-compliant with WoF, CoF and vehicle licensing, vehicles of high risk and disqualified drivers, stolen vehicles and vehicles of persons who are otherwise wanted for road safety and criminal offending. ANPR is being used by police, but in a very limited manner in terms of what ANPR is now capable of when using more modern technology and linking into network camera systems.
• Technology is now available to enforce other road safety and network efficiency offences, such as incorrect lane use, unsafe lane changing and variable speed limits. There is no strategy in place to advance this.
• The Police Infringement Processing System (PIPS) was designed and developed at a time when much of the new automated enforcement technology was not available or envisaged to be in place in New Zealand. If new enforcement technology is to be introduced, PIPS will need to be upgraded or replaced. An example is that the dual purpose cameras are currently only operated in red light mode because PIPS is not capable of processing two offences from the same camera incident. Similar issues are likely with point-to-point cameras and weigh-in-motion enforcement.
• There is scope for re-thinking risk management and encouragement of compliance as a proactive, prevention-oriented approach rather than as a reactive, history-based and punitive approach, and using automation to optimise benefits.
Many industries now use technology to manage a range of transport risks (e.g., on-vehicle systems linked to back office to monitor speed or working hours; weigh-in-motion at ports) – may be opportunities for joined-up approaches.

Improvements in the accuracy of GPS may mean it becomes more useful for some compliance purposes.

2.2 Opportunity – increasing use of Intelligent Transport Systems

There is an opportunity to develop an automated compliance strategy concurrently with on-going work on developing Intelligent Transport Systems (ITS). The need for an automated compliance strategy for New Zealand needs to be seen in the context of the increasing importance and uptake of ITS as the foundation for network management. Essentially automated compliance systems are a subset or particular application of ITS, so automated compliance strategy development and implementation need to be integrated with the overall development of ITS and broader network management in New Zealand.

3. OUTCOMES/BENEFITS Sought

Increasing use of effective and efficient automated compliance systems will deliver:

- Reduced deaths and serious injuries – not just the traditional categories covered in the road toll but extending to those working on the land transport system and the wider public affected by the network.
- A compliance system that is well-accepted and trusted by stakeholders and system users
- Value for money (benefits significantly outweigh costs)
- Greater network efficiency
- More predictable journey times
- Integrated network management
- Reduced road/closures delays due to road crashes
- Reduced rates of offending and increased voluntary compliance through using technology to influence behaviour
- Better targeting of resources to risk and matching operations to organisational capabilities
- Improved environmental outcomes/sustainability
- A more level playing field for commercial operators that actively rewards responsible operators and discourages rogue operators
- Better asset management and protection
- A "future ready" network

### 4. STRATEGIC ALIGNMENT

<table>
<thead>
<tr>
<th>AREAS OF FOCUS</th>
<th>STRATEGIC INITIATIVES</th>
<th>HOW THIS PROJECT CONTRIBUTES TO ACHIEVING THE BUSINESS OR TRANSPORT SECTOR STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Policy Statement</td>
<td>Objective: A land transport system that is a safe system, increasingly free of death and serious injury</td>
<td>Greater use of automated compliance will contribute to reducing deaths and serious injuries</td>
</tr>
<tr>
<td>NZ Transport Agency Statement of Intent 2015-19</td>
<td>Objective: A land transport system that delivers the right infrastructure and services to the right level at the best cost</td>
<td>Automated compliance can significantly reduce transaction costs per infringement detected, and enable better targeting of resources to risk</td>
</tr>
<tr>
<td>Safer Journeys Action Plan 2016-2020</td>
<td>Objective 4: Implement the Safe System approach to create a forgiving land transport system that accommodates human error and vulnerability</td>
<td>Initiates a proposed enabler action under the Safer Journeys Action Plan 2016-2020 (see below)</td>
</tr>
<tr>
<td></td>
<td>Action 1: to create an environment where technology enables smart and safe choices, resulting in fewer deaths and serious injuries for all road users</td>
<td>Proposed enabler action: Develop an automated compliance strategy by 2017 to take advantage of 21st century compliance technology</td>
</tr>
</tbody>
</table>
5. CONSTRAINTS AND ASSUMPTIONS

5.1 Constraints

- No new money is available – additional investment e.g. in ICT, or other infrastructure to support automated compliance will need to be funded via the National Land Transport Fund, so some trade-offs or re-prioritisation may be required.
- Legislative change is unlikely until after the 2017 election so transitional arrangements will probably be needed.
- Relevant agencies already have full work programmes and competing priorities, limiting their ability to contribute to the workstream.
5.2 Assumptions

This Workstream Initiation Document is based on the following assumptions:

- The NZ Transport Agency, Ministry of Transport, and New Zealand Police will provide resources, subject to the constraints noted, from existing baselines to complete the agency level of the workstream by the end of 2016. Ministerial approval may take longer.
- Other?

6. WORKSTREAM SCOPE

6.1 Scope

The scope of this project includes:

- Developing a shared vision for the future of automated compliance
- Options for expanding the use of, and optimising investment in, automated compliance technologies
- Investigating what technical, institutional, ethical or funding barriers exist to wider adoption and operation of automated compliance as part of an integrated intelligent transport system and options for resolution
- Developing a framework for assessing which organisation(s) should own and operate automated devices in different situations and who should be responsible for particular functions such as prosecution, processing of notices and infringement fee collection, as well as audit and calibration of automated compliance technology
- Developing a high level “road map” and prioritisation criteria for the adoption of automated compliance systems to guide planning and investment
- Developing high level operating principles so there is a consistent approach to implementation across different technologies and risks
6.2 Exclusions

The scope of this project excludes:

- Alternatives to the current funding model such as hypothecation of fees and fines revenue.
- Use of transport related automated compliance systems for general criminal law enforcement.
- Congestion charging and other forms of road pricing.
- Re-calibration of penalties for infringement offences and whether demerit points should be applied to offences detected by cameras or other automated compliance systems.

The working group will need to be mindful of these areas of possible future development, and not make recommendations that would close off future initiatives.

7. KEY ISSUES

A preliminary assessment has identified the following issues:

- **Government** - what is the appetite for change? How does this work link to whole of government approach to infringement and other issues?
- **Stakeholder engagement** - identification of key partners and their issues, developing partnerships.
- **Legal** - enabling framework needed if the Transport Agency’s compliance role is to expand, and to allow for increasing the range of infringing behaviours potentially subject to automated compliance.
- **Agency roles and responsibilities** including outsourcing options or inclusion of other government agencies.
- **Operating principles** – for instance, criteria for deciding to use automated compliance, site selection, targeting to risk, procurement, communication plans (local and national), monitoring and evaluation of effectiveness.

- **Local government interface** – use of automated compliance on local roads, whether other local controlling authorities will operate/own/invest in automated compliance, involvement in decision making.

- **Privacy protection and data sharing** – redefining expectations of privacy on public roads, facilitating real-time sharing of information from compliance (detection) systems and registry systems.

- **Financial** – impact of changing roles on Road Policing Programme, NLTP and Transport Agency operations.

- **ICT capacity and management**, up-coming investment requirements.

- **Workforce planning**

- **Community level** – possibilities for community engagement and involvement in some aspects of delivery.

- **Developing a road map** (priorities) for the introduction of new compliance technologies – what next after safety cameras? What should be in place in 5, 10 or 15 years?

8. **RISKS**

- Stakeholder/public perceptions about revenue gathering and extension of this by stealth.

- Lack of expertise in new technologies.

- Lack of system capacity to implement significant change.

- Uncertainty about benefit–cost ratios (investment required vs expected safety and/or efficiency gains).

14 WORKING DRAFT 6/4/16 – NOT NZ Transport Agency or Government Policy
Not achieving deadlines/opportunities for inclusion in NLTP – too late to be helpful

Lack of alignment with other priorities

Pace of technological change outstrips system capacity to implement (constant catch-up) – need to have a living strategy rather than being too prescriptive

Vulnerability of new technologies to any instance of failure – any malfunction can lead to loss of credibility and closing of programmes

Other?

These will need to be further analysed and mitigations identified.

9. INTERFACES AND DEPENDENCIES

9.1 Road Policing Programme 2015–18

The 2015–18 Road Policing Programme provides for three-year National Land Transport Fund investment and the work programme of road policing activities to be delivered for 2015/16. The RPP work programme for 2016/17 and 2017/18 will be put in place during 2015/16 and will take into consideration the findings of the Police strategic change programme, Policing Excellence: the Future. Also note development of Road Policing Action Plan.

If Police is to exit automated compliance, possible transitional arrangements would need to be included in the 2017/18 RPP.

9.2 Development of Government Policy Statement 2018 and NLTP 2018–21
Policy decisions relating to automated compliance will need to be made early in 2017 to enable incorporation in the 2018 GPS and the 2018-21 NLTP. Adequate lead-in time will also be needed for any regulatory changes.

9.3 Implementation of Safer Speeds Programme

This priority action from SJAP 2013–2015 has now transitioned to the implementation or business as usual phase. The key features, from a Transport Agency perspective are:

1. Applying a **safe system** approach and the safe system principles at all times
2. Using new ‘changing the conversation’ tools to actively grow **public and community understanding** of the role that speeds play, and seek solutions that have broad public or community support
3. Achieving national consistency by applying the **Speed Management Guide** to all State highway speed limit and management changes, as well as to all external submissions on local authority speed limit reviews
4. Avoiding low-value and reactive work by **proactively targeting areas of greatest return** by using and promoting the new Speed Risk Rating tool
5. Continuing to take a **national leadership** role in speed management and submitting on all proposed local authority speed limit reviews.
6. Given that speed management and limits can be controversial, the Transport Agency will appropriately escalate sensitive and significant decisions and issues.

The Safer Speeds Programme may provide some guidance for addressing other areas of road safety risk.

9.4 Continuing work on Intelligent Transport Systems

Both the Ministry of Transport and the Transport Agency will need to consider the interface between the expanding use of ITS and the place of automated compliance systems within this. Issues could include:

- Ability of systems to work together/communicate
• Interface between network management and compliance functions
• How third party involvement in system development, operation and maintenance is managed
• Procurement (achieving economies of scale, avoiding ad hoc developments)
• Technology standards – compliance technology needs to meet standards for gazetting as approved traffic surveillance devices and be able to withstand challenges to accuracy and reliability in court proceedings
• How compliance systems can communicate with vehicles, drivers and other system users.

9.5 Other interface/dependency issues?
Also consider: Ministry of Justice collections function – downstream effects, MBIE technology work, WorkSafe and Zero Harm

10. WORKSTREAM DELIVERY

10.1 Approach

10.1.1 Developing strategic direction

A shared and engaging vision for automated compliance is needed to enable the transport sector to maximise the opportunities provided by automated compliance to improve both safety and efficiency. Conversations within organisations and with stakeholders may be an effective approach. These could look at developing a high-level vision or purpose statement underpinned by a clear articulation of benefits (value) to the system user.

Here is a starter:

By [2030] Intelligent Transport Systems will underpin transport management in New Zealand. Automated compliance systems will be a fully integrated part of ITS. They will form a key part of system design together with measures such as infrastructure design, in-vehicle features, road user education and incentives to promote both safety and efficiency. Automated compliance systems will.
10.1.2 Developing a road map?

For discussion: alongside the long term vision this workstream could also develop a road map (not as prescriptive as an action plan) which could broadly indicate the priority order for introducing additional applications for non-compliance (which will offer the greatest safety and/or efficiency gains) and the dependencies involved.

10.1.3 Operating principles

In developing consistent operating principles for automated compliance, the working group will consider (indicative list):

- The evidence base for the effectiveness of a range of automated compliance systems
- International best practice for deployment including:
  - Targeting to risk and available data sources for assessing risk
  - Performance measurement – standards and targets
  - Monitoring and evaluation
  - Community support
  - Fit with other interventions
- Investment Logic Mapping (perhaps developing an exemplar)
- Options for institutional roles and responsibilities – strengths and weaknesses/ benefits and costs
• Funding options including hypothecation of compliance revenue
• Establishment, operational and transaction costs of automated enforcement vs traditional enforcement
• Stakeholder engagement and communication
• Other?

Appendix 1 sets out relevant performance criteria from the New South Wales Speed Camera Strategy.

10.2 Work breakdown structure and timeline (indicative)

Note: NRSMG/NRSC on 26 May - opportunity to endorse approach

Initiation & confirm scope & team
Research/Literature review 30 June
Sector engagement I 31 July
Analysis & options development
Draft report & recommendations Mid-September

NRSMG & NRSC approval for sector engagement 30 September
Sector engagement II 31 October
Analyse feedback and finalise
NRSMG/NRSC approval 20 December
Minister/Cabinet February-April
11. WORKSTREAM GOVERNANCE

To be confirmed

Project Team

To be confirmed

<table>
<thead>
<tr>
<th>NAME</th>
<th>PROJECT ROLE</th>
<th>RESPONSIBILITIES</th>
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<td>NAME</td>
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</table>

12. STAKEHOLDER MANAGEMENT AND COMMUNICATIONS

To be developed
Appendix – NSW Speed Camera Strategy: criteria for programme & camera effectiveness

### Table 2: Criteria for Measuring Camera Effectiveness

<table>
<thead>
<tr>
<th>Enforcement type</th>
<th>Evaluation data</th>
<th>Measure of effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile speed cameras</td>
<td>Annual speed surveys</td>
<td>Reduction in vehicles exceeding speed limit across the road network/ random sample of locations</td>
</tr>
<tr>
<td></td>
<td>Compliance data</td>
<td>Increase in compliance rates/Reduction in infringement rates</td>
</tr>
<tr>
<td></td>
<td>Crash data</td>
<td>Reduction in crashes and casualties across NSW</td>
</tr>
<tr>
<td>Red-light speed (safety) cameras</td>
<td>Speeds</td>
<td>Reduction in vehicles exceeding speed limit at intersection</td>
</tr>
<tr>
<td></td>
<td>Compliance data</td>
<td>Increase in compliance at intersection/Reduction in infringement rates</td>
</tr>
<tr>
<td></td>
<td>Crash data</td>
<td>Reduction in casualties and crashes at intersection</td>
</tr>
<tr>
<td>Fixed speed cameras</td>
<td>Speeds</td>
<td>Reduction in vehicles speeding within 500 metres of the camera</td>
</tr>
<tr>
<td></td>
<td>Compliance data</td>
<td>Increase in compliance at camera location/Reduction in infringement rates</td>
</tr>
<tr>
<td></td>
<td>Crash data</td>
<td>Reduction in casualties and crashes within 500 metres of the camera</td>
</tr>
<tr>
<td></td>
<td>Risk</td>
<td>Level of risk continues to be reduced at the location (for example, by level of speeding and/or crashes involving vehicles)</td>
</tr>
<tr>
<td>Point-to-Point enforcement</td>
<td>Speeds</td>
<td>Reduction in heavy vehicle speeding within enforcement length</td>
</tr>
<tr>
<td></td>
<td>Compliance data</td>
<td>Increase in compliance within the enforcement length/Reduction in infringement rates</td>
</tr>
<tr>
<td></td>
<td>Crash data</td>
<td>Reduction in crashes within enforcement length</td>
</tr>
</tbody>
</table>

### Table 3: Criteria for Measuring Overall Effectiveness of Enforcement Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile speed camera</td>
<td>Reduction in road trauma, speed-related crashes and speeding across the whole road network</td>
</tr>
<tr>
<td>Red-light speed (safety) camera</td>
<td>Reduction in frequency and severity of crashes at enforced intersections (and at all signalised intersections due to deterrence effect across the network)</td>
</tr>
<tr>
<td>Fixed speed</td>
<td>Reduction in vehicles speeding and the frequency or severity of crashes at fixed speed camera locations</td>
</tr>
<tr>
<td>Point-to-Point</td>
<td>Reduction in speeding and the frequency or severity of crashes on point-to-point enforcement lengths</td>
</tr>
</tbody>
</table>
### Figure 1: Drivers' Attitude to Speed Enforcement Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Strongly approve</th>
<th>Somewhat approve</th>
<th>Neither approve nor disapprove</th>
<th>Somewhat disapprove</th>
<th>Strongly disapprove</th>
<th>Don't know/unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed speed cameras in school zones</td>
<td>74%</td>
<td>17%</td>
<td>4%</td>
<td>4%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Point to point enforcement for heavy vehicles</td>
<td>58%</td>
<td>27%</td>
<td>5%</td>
<td>8%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Red light speed cameras, also known as safety cameras</td>
<td>47%</td>
<td>32%</td>
<td>9%</td>
<td>10%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Police parked on the side of the road with a radar</td>
<td>44%</td>
<td>38%</td>
<td>7%</td>
<td>10%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Police in a moving patrol vehicle with a radar</td>
<td>44%</td>
<td>39%</td>
<td>7%</td>
<td>1%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Marked mobile speed cameras</td>
<td>34%</td>
<td>51%</td>
<td>1%</td>
<td>1%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Fixed speed cameras not in school zones</td>
<td>31%</td>
<td>37%</td>
<td>14%</td>
<td>15%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Point to point enforcement for all vehicles</td>
<td>29%</td>
<td>29%</td>
<td>15%</td>
<td>20%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Unmarked mobile speed cameras</td>
<td>23%</td>
<td>27%</td>
<td>20%</td>
<td>32%</td>
<td></td>
<td>1%</td>
</tr>
</tbody>
</table>

Base: All participants (n=1500)

- Strongly approve
- Somewhat approve
- Neither approve nor disapprove
- Somewhat disapprove
- Strongly disapprove
- Don't know/unsure
Hi everybody

Thank you for your participation at today’s meeting.

Here is a summary of the main points:

1. **Apologies** – Hannah Hyde (Transport Agency)

2. **Round table:**

   **Transport Agency** – main focus on information gathering and planning

   **Ministry of Transport** – limited resources in the Safety team but keen to see progress. [redacted] will liaise with the Ministry’s technology team about sharing ideas and information. Interested in the regulatory issues. Will assist with briefing the Minister.

   **Police** – hunger to use new technology, especially for CVIU functions. Regulatory framework needs updating. Look for opportunities to leverage off other systems e.g. the weighing systems at port exits could also be used to manage entry to the road network (safety and protection of network assets). Traditional officer-led policing is being engineered out of the network, so new technology needed and has the potential to be more efficient.

   **ACC** – a business case is still open for investment in trial technology for road safety. ACC can also assist by partnering with local government RCAs. Opportunity to link automated compliance work with the national fleet safety partnership programme co-designed with industry (ACC lead supported by WorkSafe NZ and the Transport Agency). Page 13 of the Safer Journeys Action Plan 2016-2020 refers. Contacts are James Newton (Transport Agency) and [redacted] (ACC). Role of insurance companies also noted.

General discussion also noted:
- Emerging collision prevention technology (both vehicle to vehicle, and network to vehicle) – better to prevent than enforce.
- Too many roads still have speed limits that are too high for the road’s design and function (address through Safer Speeds Programme roll-out)
- Scope for using other levers, particularly apps, to increase voluntary compliance
- Z is being proactive as a good corporate citizen with learner driver app (link to employment opportunities) and commercial vehicles (in-cab cameras and GPS as part of improving truck driver safety)
- Minor amendments to the Land Transport Act in progress include Police being able to access photos from the Driver Licence Register.

3. **Workstream Initiation Document V0.3**

   General agreement that this is good enough as a baseline to work from (thank you 🙌). Can be updated if required.

   Comments: p.7 under 2.1 Problem Statement – note that supporting initiatives to reduce the number of young drivers entering the criminal justice system via traffic offences is important for whole of government

   p. 10: 6.2 exclusions – note that alcohol interlock issues are being addressed separately. (Increasingly vehicles will have this technology built-in).


   General agreement with the phases and timing. The NRSC Ministers will need to be briefed before the key stakeholder engagement (mid-July).

   TRAFINZ Conference in November would be a good opportunity to raise awareness across the sector.

   Implications of options will need to be discussed with Ministry of Justice and Corrections.
5. Literature Review &
6. Stocktake/current state assessment

As discussed – please send any links, articles or reports that you think would be useful to Siobhan and me, or send the contact details of people we should talk to. Siobhan will also circulate weekly links to information and compile a summary table of resources to inform the strategy development. Thank you to Robyn for offering to coordinate and collate ACC input.

7. Communications & Engagement
The Transport Agency will start development. Noted that [redacted] is the Police communications contact.

8. Next meeting

Monthly meetings probably sufficient with frequent e-mails to share information and ideas. Next meeting provisionally scheduled for Wed 15\textsuperscript{th} June at 2pm, Thank you to MoT for providing the central venue for the time being.

Please reply to all if there are any additions or corrections to these notes. FYI I'm also attaching the article we referred to about camera developments that would facilitate detection and enforcement of offences such as cell phone use and not wearing seatbelts.

Thanks again

Margaret

Margaret Dugdale / Principal Advisor, Strategy Team
Strategy, Communications and Performance

[address redacted]

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Passenger Compartment Violation Detection in HOV/HOT Lanes

Yusuf Artan, Member, IEEE, Orhan Bulan, Member, IEEE, Robert P. Loce, Senior Member, IEEE, and Peter Paul, Member, IEEE

Abstract—Due to the high volume of traffic on modern roadways, transportation agencies have proposed high occupancy vehicle (HOV) and high occupancy tolling (HOT) lanes to promote carpooling. Enforcement of the rules of these lanes is currently performed by roadside enforcement officers using visual observation. Officer-based enforcement is, however, known to be inefficient, costly, potentially dangerous, and ultimately ineffective. Violation rates up to 50%-80% have been reported, whereas manual enforcement rates of less than 10% are typical. Near-infrared (NIR) Vision Systems have recently proposed to monitor HOV/HOT lanes and enforce the regulations. These camera systems bring an opportunity to automatically determine vehicle occupancy from captured HOV/HOT NIR images. Due to their ability to see through windshields of vehicles, these cameras allow enable enforcement of other passenger compartment violations such as seatbelt violation and driver cell phone usage, in addition to determining vehicle occupancy. In this paper, we propose computer vision methods for detecting vehicle occupancy, seatbelt violation, and driver cell phone usage from NIR images captured from HOV/HOT lanes. Our methods consist of two stages. First, we localize the vehicle's front windshield and side window from captured HOV/HOT images using the deformable part model (DPM). Next, we define a region of interest in the localized image for each violation type and perform image classification using one of the local aggregation-based image features, i.e. bag-of-visual-words (BOW), vector of locally aggregated descriptors (VLAD), and Fisher vectors (FV), and compare the performance for each case. We also compare the performance of DPM-based detection with the image classification methods for vehicle occupancy and seatbelt violation detection. A dataset of over 4000 images including front/side view vehicle images with seatbelts and cell phone violations was collected on a public roadway and is used to perform the experiments.

Index Terms—Law enforcement, high occupancy lane enforcement, cell phone usage detection, seatbelt violation detection, locally aggregated features, Fisher vectors, bag of visual words, deformable part model.

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I. INTRODUCTION

I N T E L L I G E N T transportation systems (ITS) improve safety and mobility through the integration of sensing, computational power, and advanced communications into the transportation infrastructure. Managed lanes enabled by ITS combine traffic management, tolling, transit, and carpooling in a multi-purpose roadway, creating new options for agencies and the traveling public, and use congestion pricing to more efficiently manage demand and generate revenue. High Occupancy Vehicle (HOV) lanes are standard car-pool lanes where either two (2) or three (3+) vehicle occupants are required in order to use the lane. Due to these requirements, the HOV lanes are typically less congested and allow a vehicle to make its journey more rapidly [1]. High Occupancy Tolling (HOT) lanes are a form of managed lanes where single-occupant vehicles are allowed to use the HOV lane upon payment of a toll. Typically the toll is dynamically adjusted in real-time to maintain a minimum speed on the roadway—often the minimum speed is 45 miles per hour (mph). If the average traffic speed on the HOT lane starts to become lower than 45 mph, the toll price increases to discourage additional vehicles from entering the HOT lane. However, to realize the congestion reducing benefit of HOV/HOT lanes, the rules of the HOV/HOT lane need to be enforced. To enforce the rules of these lanes, current practice requires dispatching law enforcement officers at the roadside to visually examine incoming cars. This method is expensive, difficult, and ultimately ineffective. Typical violation rates can exceed 50%-80%, while manual enforcement rates are typically less than 10% [6]. Currently, transportation authorities are seeking an automatic or semi-automatic approach to replace and/or augment this manual enforcement.

In addition to enforcing legal use of HOV/HOT lanes, enforcement of other passenger compartment violations is also of interest using imaging systems already available in high occupancy lanes. Examples of these enforcement include detecting seat-belt violations and illegal cell phone usage while driving. Recent statistics show that a high number of accidents have been caused by distracted drivers due to mobile phone usage while driving [7], [8]. According to the study in [7], 995 out of 5474 people (18%) who were killed in distracted driver fatalities in 2009 were considered to be killed by drivers distracted by mobile phones. The chance of vehicle occupants being killed in a car accident significantly increases when they are not using seat-belts [9]. Due to their impact on public safety and property, several states and countries have enacted regulations to wear a seat-belt and ban mobile phone usage while driving.
In this paper, we examine vehicle occupancy detection, seatbelt violation and cell phone usage detection as part of an automatic HOV/HOT lane enforcement system. The enforcement system includes a camera-based imaging system to capture still images in the near-infrared (NIR) band through the windshield and side window of an approaching vehicle. NIR cameras are commonly used in transportation imaging systems to ensure adequate illumination while not distracting a driver. Our methods consist of two stages; first, we localize the vehicle’s front windshield and side window from captured HOV/HOT images using a DPM-based method [10]. Next, we define a region of interest in the localized images for each violation and perform image classification using one of the local aggregation-based image features; BoW [11], VLAD [12] and FV [13] and compare their performances for each violation type. We also examine DPM-based object (e.g., face and seat belt) detection methods and compare their performances with the image classification methods for vehicle occupancy and seat belt violation detections. For cell phone usage detection, we consider two architectures using full face images and half face images and compare their performance in terms of sensitivity and specificity.

Several other image-based methods have been proposed for HOV/HOT lane enforcement in the literature. The majority of these techniques solely focus on vehicle occupancy detection using various face detection methods [5], [14]–[16]. Determining vehicle occupancy based on face detection, however, is not reliable under occlusion with arbitrary face poses, especially for the images captured from side view. More recently, studies have proposed methods that extract certain features to potent passengers including seats, seat belots, or skin that are visible to the camera to distinguish passengers vs. no passenger [17], [18]. In addition to these occupancy detection methods, several seat belt detection techniques have been also proposed in the literature [19]–[21], though not as part of a HOV/HOT lane enforcement system. These techniques aim to detect straight lines on a certain orientation in the image or use other image processing methods to directly detect the seat features to make a decision on seat belt violation. Detecting lines in an image, however, requires reliable edge detection, which is not always feasible, due to partial occlusion and low fidelity imaging conditions. Several recent studies [22], [23], proposed machine-learning-based methods for driver cell phone usage detection while driving. However, these methods assume a “cooperative vehicle,” where the camera is in-vehicle and can be optimized for that vehicle. The present paper addresses the law enforcement need to observe arbitrary vehicles using NIR cameras installed roadside or on gantries, and comprehend the various view and environmental variations.

Parts of the research included in this paper were reported in [1]–[3]. This paper represents significant novelty and improvements over the preliminary conference in the following respects: a) DPM-based windshield detection is extended to side windows, b) a comprehensive framework for occupancy detection using front and side view images is presented, c) a classification-based seat belt violation detection is presented, d) classification-based seat belt violation detection method is compared with a DPM-based line detection method, e) automated region of interest detection for each violation based on landmark locations is described, f) experimental results are included for a more comprehensive set of applications.

The organization of this article as follows. Section II briefly summarizes the image acquisition system and procedure for HOV/HOT lane management. In Section III, we describe the details of our methodology for windshield and side window detection from HOV/HOT NIR images using the deformable parts model. Section IV summarizes local image descriptors and their application to image classification. Evaluation of the methods using real world road images are presented in Section V. Sections VI and VII discuss the key points and findings of the present study.

II. HOV/HOT IMAGE ACQUISITION

Fig. 1 shows an illustration of an NIR image acquisition system. The overall system includes front and side view camera triggers and camera systems to capture NIR images of both...
the front windshield and side view of approaching cars in HOV/HOT lanes. The exposure time of the cameras is set such that the image acquisition noise and motion blur is traded-off to capture clear images of vehicles driving at a typical speed (30~80 mph). The front view camera system is mounted on an overhead gantry while the side view camera is mounted along the road side. The camera triggers can be either induction loops, installed beneath the road as in red light enforcement systems, or laser beam triggers [24], [25]. The distance from the front view camera to front view trigger is on average 60-feet and the horizontal field of view of the camera is approximately 12-feet at that distance to accommodate the typical width of highway lanes in United States. The distance between the side view camera and the side view trigger is set to 10 feet to capture side windows of a passing vehicle. The side view trigger is placed 24 feet after the front view trigger so that the system first captures the front windshield of an approaching vehicle and then captures side view of the vehicle. Each camera system uses its own trigger, IR illuminator, control and processing units. A long pass filter (> 750 nm) is used to filter out the infrared light from the illuminators to reduce its visual impact on drivers.

Using the HOV/HOT NIR imaging system, we collected a roadway dataset of over 4000 images. Fig. 2 shows NIR images acquired by the HOV/HOT lane front and side view cameras. Note that there is a large variation in image intensity due to variations in windshield and window transmittance, illuminator state, camera position, cloud position, and other factors even though images were captured by an NIR camera [26].

Our methodology in the following sections needs to comprehend these challenges for reliably locating a region of interest and performing the classification task for detecting passenger compartment violations.

III. WINDSHIELD AND SIDE WINDOW DETECTION FROM HOV/HOT IMAGES

An overview of our methodology for passenger compartment violation detection is illustrated in Fig. 3. Our algorithm uses the front and side view images captured by a HOV/HOT image acquisition system as illustrated in Fig. 1. The first step after image acquisition is locating front windshield and rear side window from the front and side view images, respectively. This localization eliminates portions of the captured image irrelevant to passenger compartment violations and hence, enables us to extract relevant features from the localized image patches for violation detection. While front seat occupancy, driver mobile phone usage, and seat belt violations are detected from the localized front windshield image, the side view image is used to detect rear seat occupancy. From the processing of localized front and side view images and combining the front and rear seat occupancy information, passenger compartment violations in HOV/HOT lanes are detected.

For windshield detection, we adopted the DPM-based object detector method [10], which considers pose estimation and object detection problems jointly using a deformable parts model. This model forms a mixture of trees with a set of shared parts V, where each object part is considered as a node in the tree. The model then forms an optimization problem by jointly optimizing appearance and shape of the windshield parts. For a given image, this optimization problem is solved using dynamic programming to find the best configuration of object parts. Using the DPM framework, we generated a windshield model by positioning a set of landmarks and their relative locations around the windshield, the 13 landmark points are labeled manually in a set of training images similar to Fig. 4(a) in the same sequence. Even though the windshield has a unique trapezoidal shape, the shape alone is not sufficient to uniquely identify its location in the image because many lines/structures in the scene can often form similar trapezoidal shapes (e.g., roof top, lines on the pavement, shadows of objects, sun roof). Hence, we included the rear-view mirror landmarks as part of the windshield in order to detect windshields from cluttered scenes. The number of landmark points can be adjusted based on the complexity of the objects in the scene and the amount of unique features to be included. For example, for detecting faces in different poses in an image, more than 30 landmark
points are needed to cover unique facial features such as nose, mouth and eyes [10]. In windshield localization, the edges are straight lines except the pair associated with rear-view mirrors. Hence, there is less benefit to include many landmark points, which can significantly increase the amount of manual work in the training phase. In our implementation, we used 10 positive and 20 negative images for training the windshield model. Negative samples were selected from images that do not contain windshields in the scene. In our model, rather than generating a mixture model, we consider a single topological view as the images are captured with a fixed camera and vehicle, are always driving towards the camera along the same direction and angle with respect to the image plane. The windshield has a unique trapezoidal shape and does not show a significant variation across different vehicle types. We generated a linearly parameterized tree-structured model $T(V, E)$, where $V$ is the set of parts and $E$ is the set of edges between parts. A windshield score for a particular configuration of landmarks $L = \{l_i; i \in V\}$ in a given image $I$ is defined as

$$S(I, L) = \text{App}(I, L) + \text{Shape}(E)$$
$$= \sum_{i \in V} w_i \cdot d(i, l_i) + \sum_{i \in E} a_{ij} dx^2 + b_{ij} dy^2 + c_{ij} dx + d_{ij} dy.$$  (1)

Note that this score function is an abridged version of the general score function defined for mixtures of trees [10] for a single tree-structure. In this function, $\phi(I, l_i)$ represents the histogram of gradients (HoG) features extracted at pixel location $l_i$ [27], and $l_i = (x_i, y_i)$ stands for the pixel location of part $i$. The appearance evidence of each of the landmarks is represented in the App term and the evidence for the spatial locations of the landmarks with respect to each other is included in the Shape term. In [28], this model was viewed as a linear classifier with unknown parameters $w_i$ and $(a_{ij}, b_{ij}, c_{ij}, d_{ij})$, which is learned during training using a latent SVM. The training constructs a model by learning the appearance at each landmark point and the relationship between points as shown in Fig. 4(b).

For an incoming image $I$, we identify a list of candidate windshield areas by maximizing the score function Eq. (2) over $L$ using dynamic programming to find the best configuration of parts [10], [28]

$$S^*(I) = \max_L S(I, L).$$  (2)

Similarly, we develop a side window model using the DPM framework described above. For the side window model, we used 5 mixture corresponding to 5 different rear side window types obtained in our training data (e.g., rear side windows for SUVs, sports cars, two different passenger cars, and vans) as shown in Fig. 5(a). During training, we used 50 positive images from 5 different side window types (i.e., 10 images per side window type) and 50 negative images. Landmark points (red points) overlaid on top of the side view images corresponding to 5 mixtures are shown in Fig. 5(a). In the training stage, we learn an appearance and shape model for each mixture component as shown in Fig. 5(b).

For some vehicles, front and rear side windows resemble each other and in these cases, 5-mixture side window detector, described above, causes false positives by detecting front instead of rear side window. In order to address this issue, we generated a DPM model for the detection of the B-pillar, which separates the front side window and rear side windows. The B-pillar detector enables us to capture side window boundary more precisely and discard the false alarms by comparing the location of the detected window and B-pillar. Assuming that $x_w$ and $x_B$ show the respective center of mass of the detected side window and of the B-pillar along the horizontal axis, respectively, a detected side window is validated if $(x_w - x_B) > t$ where $t$ is a pre-defined threshold based on camera configuration and geometry. $x_w$ and $x_B$ are calculated from the detected landmark points as $x_{w,B} = \sum_{i=1}^{n} x_i / n$ where $n$ and $x_i$'s represent the number and $x$-coordinates of the detected landmark points, respectively. Fig. 6(a)–(c) illustrate B-pillar sample images with training points overlaid. Fig. 6(d) depicts the trained deformable part model obtained using 15 positive and 20 negative images.

IV. IMAGE CLASSIFICATION FOR VIOLATION DETECTION

A. Defining Regions of Interest in Localized Windshield and Side Window Images

Following windshield localization, three regions of interest (ROIs) are defined on the image plane corresponding respectively to the front seat occupancy, driver cell phone usage, and seat belt violation detections. These ROIs are illustrated in Fig. 7. For front seat occupancy detection, the ROI is defined as the left half of the detected windshield as shown in the figure (i.e., white dashed rectangle). Similarly, the ROI for driver mobile phone usage is defined as a rectangle around the driver’s face (i.e., blue solid rectangle), and the ROI for the seat belt detection is defined as the green dotted rectangle in the figure.
The ROIs for occupancy and seat belt detection are calculated using the position of the detected windshield and landmarks $l_i$, $i = 1, 2, \ldots, 13$. The center of the region for the seat belt detection $(r, c)$, for example, is defined using landmarks $l_6$, $l_7$, and $l_8$, where $r$ is set to the weighted average of the $x$-coordinates of $l_6$ and $l_7$ and $c$ is calculated as the weighted average of $y$-coordinates of $l_7$ and $l_8$. The height of the region is determined based on the difference between $y$-coordinates of $l_7$ and $l_8$ and width is determined based on the difference between $x$-coordinates of $l_6$ and $l_7$. Similarly, the location and size of the white rectangle corresponding to front seat occupancy detection is calculated using landmarks $l_4$, $l_5$, and $l_9$.

Defining the region of interest for the driver mobile phone usage detection, on the other hand, requires face detection in the localized windshield image. Detecting the driver’s face from the entire windshield image is challenging as the driver’s face is often partially occluded by the sun visors, rear view mirror, or car roof. Fig. 7 illustrates several instances of partial occlusions in HOV/HOT images. In order to detect faces in these cases while not increasing false positive detections, we restrict the search space by first cropping the right half of the detected windshield image. Restricting the region of interest for face detection provides flexibility for adjusting the detection threshold. Instead of setting a fixed threshold for face detection, we pick the windows with the highest score calculated by the face detector as the driver’s face, which enables detection of faces with partial occlusions whose score otherwise would not pass the detection threshold.

Unlike windshield images, the ROI for occupancy detection from the side view images is the entire localized rear side window as the passenger can be at any location in the localized image. The defined ROIs in the detected windshield image and the localized rear side window image are further processed as described in the next section to identify violators.

### B. Image Classification

For performing the image classification task, we consider local invariant descriptors that are aggregated into an image level vector signature, which is subsequently passed to a classifier. We use three locally aggregated descriptors BoW, VLAD, and FV due to their extensive usage and success in image classification and categorization tasks [11]–[13].

Among these descriptors, BoW has the oldest history and was the initiative for other locally aggregated descriptors [11]. From a set of training images, BoW first calculates dense SIFT features [29] and constructs a codebook of visual words that consist of $K$-centroids calculated by either $K$-means or Gaussian mixture model clustering algorithms applied on the calculated SIFT features. The dimension $d$ for the SIFT feature vectors was 128. For an image in query $I$, local image descriptors $I = (x_1, x_2, \ldots, x_N)$ are calculated and assigned to the closest cluster centers. Following the assignment step, a histogram of local descriptors is calculated and aggregated to generate the final image signature vector.

Similar to BoW, VLAD is a feature encoding method for image classification tasks that first constructs a vocabulary of visual words by clustering dense-SIFT features for a set of training images. The visual vocabulary is generated by $K$-clusters calculated by either $K$-means or Gaussian mixture model clustering algorithms. Each cluster is represented by the cluster mean $\mu_k$. For a query image, VLAD first calculates local image descriptors and assigns them to the closest cluster centroids. For the descriptors assigned to the same cluster, it calculates a total distance vector from the cluster mean as

$$v_k = \sum_{x_i : N(x_i) = k} (x_i - \mu_k).$$

The final VLAD descriptor is formed by the concatenation of the $d$-dimensional distance vectors $v_k$ for each cluster as $\phi(I) = [v_1, v_2, \ldots, v_K]$.

FVs have recently flourished as the probabilistic version of the VLAD and have been reported to achieve the best performance in several image classification and categorization tasks [12]. FV has been proposed to incorporate generative models into discriminative classifiers [13]. Suppose $X = \{x_t, t = 1\ldots T\}$ denotes the set of $T$ local descriptors extracted from
a given image. We assume that the generation process of local descriptors can be modeled by a probabilistic model \( p(X|\theta) \) where \( \theta \) denotes the parameters of the function. The gradient vector \( X \) is described as [13]

\[
G_X^\theta = \frac{1}{T} \nabla_\theta \log p(X|\theta)
\]

(4)

where the gradient of the log-likelihood describes the contribution of the parameter \( \theta \) to the generation process. Its dimensionality only depends on the number of parameters in \( \theta \).

A natural kernel on these gradient vectors is the Fisher kernel [13]

\[
K(X,Y) = G_X^\theta \cdot F_{\theta}^{-1} G_Y^\theta
\]

(5)

where \( F_{\theta} \) is the Fisher information matrix of \( p(X|\theta) \)

\[
F_{\theta} = E_{p(x)} \left[ \nabla \log p(X|\theta) \nabla \log p(X|\theta)^T \right]
\]

(6)

where \( F_{\theta}^{-1} \) is symmetric and positive definite, it has a Cholesky decomposition \( F_{\theta}^{-1} = L_\theta^T L_\theta \). Therefore the kernel \( K(X,Y) \) can be written as a dot product between normalized vectors \( g_{\theta} \) shown in Eq. (7)

\[
g_{\theta} = L_\theta g_X^\theta
\]

(7)

Typically, \( g_X^\theta \) is referred to as fisher vector of \( X \). Similar to the earlier work [30], we assume that \( p(X|\theta) \) is a Gaussian mixture model (GMM): \( p(x|\theta) = \sum_{k=1}^{K} \omega_k p_k(x) \). We denote \( \theta = \{ w_1, \mu_1, \sigma_1, \ldots, w_K, \mu_K, \sigma_K \} \) where \( w_k, \mu_k \) and \( \sigma_k \) are respectively the mixture weight, mean vector and variance matrix (assumed diagonal) of Gaussian \( p_k \). In this paper, we only consider gradients with respect to the mean. We use the diagonal closed form approximation of the Fisher information matrix of [30] in which case the normalization of the gradient by \( L_\theta \) is simply a whitening of the dimensions.

Let \( \alpha_i(t) \) be the assignment of the sample \( x_i \) to the \( t \)th Gaussian

\[
\alpha_i(t) = \frac{w_i p_i(x_i|\theta)}{\sum_{j=1}^{K} w_j p_j(x_i|\theta)}
\]

(8)

Let \( g_{\theta}^X \) denotes the \( d \) dimensional gradient with respect to the mean \( \mu_i \) of Gaussian \( i \). Assuming that the \( x_i \)'s are generated independently by \( p(X|\theta) \), we obtain Eq. (9) after mathematical derivations

\[
g_{\theta}^X = \frac{1}{T} \sum_{t=1}^{T} \alpha_i(t) \frac{(x_i - \mu_i)}{\sigma_i}
\]

(9)

The final vector \( g_{\theta}^X \) is the concatenation of the \( g_{\theta}^X \) vectors for \( i = \{1 \ldots K\} \) and is \( K \times d \) dimensional. Experiments have been performed for values ranging from \( K = 32 \) to \( K = 512 \).

After calculating locally aggregated image descriptors using either BoW, VLAD, or FV, we utilize a linear SVM to construct the classification model and perform the image classification for each case. The classifiers are trained using a set of positive and negative images. For occupancy detection, the positive set includes images with one or more passengers and the negative set includes images with no passengers.

V. Experiments

In this section, we evaluated the performance of the proposed algorithms for passenger compartment violation detection in HOV/HOT lanes. The algorithms are tested on a set of images acquired by the HOV/HOT image acquisition system as described in Section II.

A. Dataset

Using the HOV/HOT image acquisition system, we captured 2015 front and 2042 side view vehicle images as shown in Fig. 2. The front and side view images are independent and not necessarily synchronized and we have individually evaluated the occupancy detection performance from front and side view images. For cell phone and seat-belt violations, we only used front-view images. We manually labeled the captured images for ground truth for passenger compartment violations. For side view images, we manually draw a bounding box for side window and label it as occupied or empty based on the occupancy in the rear seat. For front-view images, we draw bounding boxes for windshield, driver's face and label the image as occupied or empty based on the occupancy in the front passenger seat. We also label each front-view image as driver using cell phone or not and driver wearing a seat-belt or not. 1585 of front view images included a passenger in the front seat and 1008 of the side view vehicle images included at least one passenger in the rear seat. In our front view image set, we had 449 drivers using cell phone and 729 drivers violating seat belt regulation. The resolution of the captured images was 2352 x 1728 pixels. The windshield region of the front view images was on average 1000 x 360 pixels, and resolution of face region was larger than 100 x 100 pixels. The resolution of rear side window in side view images was on average 780 x 440 pixels.

The HOV/HOT NIR cameras captured and saved the images in 16-bit tiff format. Prior to processing the images in the pipeline of the proposed algorithm, we converted the 16-bit images to 8-bit format and applied a Wiener filtering with \( 3 \times 3 \) windows to mitigate the impact of image acquisition noise due to low light. We also performed adaptive histogram equalization to improve the contrast of the captured images.

B. Windshield and Side Window Detection

From the front and side view images, we performed windshield and side window detection using the DPM models described in Section III. These models identify a list of candidate areas for windshield and side window whose scores are calculated using Eq. (1). For front view images, we chose the highest score region as the detected windshield, from which ROIs for each case were extracted as shown in Fig. 7. Note that since the trigger initializes the image capture system, there is always a vehicle present in the captured image. In our performance evaluation, similar to Pascal challenge settings [31], we utilized Jaccard index to measure the overlap between ground truth and the detected region. Jaccard measure is defined as \( Jaccard(A,B) = |A \cap B|/|A \cup B| \), where \( A \) is the detection result, \( B \) is the ground truth for the window location and the operation \( | \) denotes the number of pixels in the region. In
our analysis, a detection result is declared true detection if it has a Jaccard value above 70%, otherwise, it is considered as a miss. For the front windshield image set used in this study, our windshield localization performance is 99.9%. This concurs with our earlier study [2], where we tested a similar model across a large number of front view images.

For side view images, we ran both 5-mixture side window and B-pillar detectors. The side window detector identifies a list of candidate regions, starting from the highest score region, the B-pillar location is compared with the location of the candidate side window region as described in Section III. The side window is detected when a candidate region is validated based on the comparison. Using the Jaccard overlap measure, we achieved a side window detection performance of 99.7%. Fig. 9 shows a set of localized windshield and side window images.

C. Image Classification

In this section, we present a detailed comparison of several local aggregation methods (FW, BoW, and VLAD) for occupancy detection, cell phone and seat belt violation detection tasks. In all of our experiments, we performed a 5-fold cross validation by randomly dividing the database into 5 groups and using one group for training and the remainder for testing where we used the smaller group for training to reduce training time.

For locally aggregated descriptors, we extracted features from 32 × 32 pixel patches on regular grids (every 4 pixels) at 5 scales. We only extracted 128-D SIFT descriptors for these image patches. For all descriptors (i.e., BoW, VLAD, FV), we used Gaussian mixture models (GMM) with $K = 256$ clusters to compute the descriptors. The GMM's are trained using the maximum likelihood (ML) criterion and a standard expectation maximization (EM) algorithm [32]. Similar to [12], we apply the power and $L_2$ normalization to descriptors to improve the classification performance. In the case of BoW, we followed a spatial-pyramid-based BoW representation in which we created histograms for the original image and spatial grid partitioning of the original image. We concatenated histograms from the original image, $2 \times 2$ and $4 \times 4$ regular spatial grid. Once the features are extracted (for positive and negative training images) using one of the local aggregation methods presented above, we train a linear SVM classifier to perform the classification task. In our analysis, we use several quantitative measures to evaluate the performance including sensitivity, specificity and area under Receiver Operating Characteristic curve (ROC). ROC is a common method used to quantify classifier performance. Sensitivity and specificity are defined as:

$$\text{Sensitivity} = \frac{TP}{TP + FN}$$

$$\text{Specificity} = \frac{TN}{FP + TN}$$

where $TP$ and $FP$ denote the number of true positive and false positives, respectively. Similarly, $TN$ and $FN$ show the numbers of true negatives and false negatives. The following sections report our experimental results for each task in more detail.

1) Front Seat Occupancy Detection: Following the front windshield localization as described in Section III, we evaluated the classification performance of the local aggregation methods (BoW, VLAD, FV) only on the passenger side of the extracted region (i.e., shown as the white rectangle in Fig. 7). The extracted passenger side images show a wide variety of human faces, facial poses, occlusions, and other expected within class variations (e.g., variations in image intensity due to windshield transmittance, illuminator state, sun position, cloud position, and other factors) as shown in Fig. 10.

Table I shows that FV performance is slightly better than both BoW and VLAD by achieving an overall accuracy of 97.06%. Note that even though specificity is lower for FV, this would not pose a risk of false citations because there is a manual supervision before issuing a ticket. Fig. 11 illustrates the average ROC curves for 5-fold cross validation corresponding.
to these 3 local aggregation methods and DPM-based face detection method. The pre-trained DPM-based face detection model (10) yields significantly lower performance in the occupancy detection task due to occlusion, illumination and pose variation. We observe that there is no significant difference between the performances of VLAD and FV descriptors in front seat occupancy detection task. Also note that our proposed method is quite robust to variations due to image acquisition. This result concurs with our earlier results [2] reported on a large dataset of front view images (i.e., 154,277 images) continuously collected across nine days. Our system fails when there is a strong glare in the captured image, but the number of these cases is negligible compared to total number of images.

2) Side Window Occupancy Detection: Similar to the front seat occupancy detection task, we build a classifier using feature descriptors corresponding to side window region for local aggregation methods (BoW, VLAD, and FV). Table II presents the performance of aggregation methods in terms of overall accuracy, recall and specificity rates for side view occupancy detection task. All descriptors perform very close to each other in terms of accuracy, sensitivity, and area under ROC curve while specificity is slightly higher for FV compared to other descriptors. Fig. 12 illustrates the average ROC curves for these 3 local aggregation methods as well as for the DPM based face detector. DPM based face detection performance is again worse than any of the local aggregation methods due to occlusion, illumination and head pose related difficulties. Note that when front seat performance is compared with the side view performance, the overall occupancy detection performance is much better for front seat images than side view images for both image classification and face detection methods. The reason for this performance gap is because the side window images have more within class variation compared to front view images as shown in Fig. 9.

3) Cell Phone Usage Detection: Cell phone usage detection comprises of 2 steps; first, localizing driver face region, and next performing an image classification of driver face region using local aggregation based feature descriptors.

We detected the driver’s face in the localized windshield images using the approach described in Section IV-A, we selected the highest score window as the driver’s face returned by the DPM-based face detector in the right side of the windshield (i.e., driver side). Our sequential methodology yielded 97% accuracy in localizing a driver’s face region where a detection result is declared correct if it has a Jaccard value above 70%. We have selected the 70% threshold such that the extended region defined around the face includes cell phone in most cases. Changing this threshold will trade-off face detection with classification performance for cell phone detection. Fig. 13 shows some of the challenging faces with partial occlusions that were detected by the proposed sequential algorithm. Note that the extracted patches after face detection is 80 pixels wider and 20 pixels higher than the detected face to capture the cell phone usage around the detected face region.

Following driver face detection, we evaluated the performance of classification on the extracted image patches using local aggregation methods (i.e., BoW, VLAD, and FV). For classification task, we consider two different architectures. In the first architecture, we train a classifier using the full face images as shown in Fig. 13. In the second architecture, we
Fig. 14. Left half faces used to train a classifier for drivers using a cell on the right hand side.

TABLE III

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<th>Acc.</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>AUC</th>
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<tr>
<td>BoW</td>
<td>0.7922 ± 0.0140</td>
<td>0.7142 ± 0.0303</td>
<td>0.8123 ± 0.0338</td>
<td>0.8617 ± 0.0059</td>
</tr>
<tr>
<td>VLAD</td>
<td>0.8031 ± 0.0117</td>
<td>0.7435 ± 0.0230</td>
<td>0.8530 ± 0.0177</td>
<td>0.8722 ± 0.0071</td>
</tr>
<tr>
<td>Fisher</td>
<td>0.8562 ± 0.0083</td>
<td>0.8830 ± 0.0420</td>
<td>0.8932 ± 0.0440</td>
<td>0.9021 ± 0.0150</td>
</tr>
<tr>
<td>H-Fisher</td>
<td>0.8579 ± 0.0010</td>
<td>0.8363 ± 0.0230</td>
<td>0.8863 ± 0.0474</td>
<td>0.9178 ± 0.0151</td>
</tr>
</tbody>
</table>

divided face images into two separate parts; drivers holding a phone with left hand and right hand. Fig. 14, for example, shows a set of left half face images using a cell phone. We then trained a classifier for each side using locally aggregated descriptors and fuse the results of each classifier to make a final decision on driver cell phone usage.

Table III presents the cell phone violation detection performance using BoW, FV and VLAD descriptors. Full face FV achieves the significantly better accuracy and specificity performance than VLAD and BoW methods. Given the fact that FV outperformed VLAD and Bow in full face architecture, we evaluated the performance for right and left side face images only using FV descriptors, where the number of training images for individual left-face and right-face classifiers are appropriately half of the original cell phone users.

As shown in Table III, Half-face FV (H-FV) has even better performance than Full-face FV in cell phone violation detection task. Fig. 15 illustrates the average ROC curves for the local aggregation methods for full face and half face architectures. Note that there is a notable difference between ROC curves corresponding to H-FV and others.

4) Seat Belt Violation Detection: Next, we investigated driver seat belt violation detection using local aggregation based image classification techniques. In order to perform this task, we localized the ROI for seat belt detection using several of the landmark points obtained with the windshield detection model as described in Section IV-A. Fig. 16 presents a set of images where the seat belt region found using our landmark based method. Next, we evaluated the performance of classification on the extracted image patches using the local aggregation methods. In our analysis, we have also included DPM based line detector model to compare image classification based techniques with a line detection approach.

Fig. 17 illustrates the average ROC curves for local aggregation methods and line-DPM model where the goal was to detect seat belt within the localized ROI instead of classifying the region. As shown in the figure, image classification based on local image descriptors significantly outperformed line-DPM model. Table IV present accuracy, sensitivity, specificity, and area under ROC curve (AUC) for BoW, FV and VLAD descriptors. Among the local descriptors, BoW performs better than FV and VLAD.

VI. DISCUSSION

Image-based classification techniques (e.g., BoW, VLAD, and FV) have several key advantages compared to object detection approaches (i.e., face detection for front and side view occupancy detection and line detection for seat belt violation detection) in detecting passenger compartment violations. In training, image-based classification techniques need only a set of positive and negative images, which can be automatically extracted from training images as described in Section IV to train a classifier. Several object detection methods (e.g., face
or seat belt detection), on the other hand, require more training time and manual work as they typically need to outline a region of interest in each training image with precise alignment. For face detector training, for example, the face region needs to be manually extracted and aligned from training images since face position can vary with respect to the front view or side view window landmarks in a captured image. The second key advantage is on the performance as supported by our experiments. Image-based classification techniques can incorporate all the information within a region of interest and hence, yield a better ROC. Detecting a specific object in the scene, however, is not always possible. For occupancy detection, for example, face detection methods will typically fail when the face is occluded. Image classification techniques can make a correct decision in these cases by incorporating non-facial information such as torso, back of head, arms etc. in the decision function. Therefore, image classification-based methods are more viable for passenger compartment violation detection. Training multiple object detectors (e.g., to incorporate non-face-related structures for occupancy detection) for a task can improve the ROC performance, but they also increase model complexity and training time.

The HOV system could be utilized in online or offline operation modes. In the online mode, the system makes a decision as the images are captured at the site and transmits the captured side-view and front-view images to a law enforcement officer at the roadside along with the system's decision of violation so that the officer can stop the violator and issue a citation. In the offline mode, the system makes a decision after the fact where the captured images are processed in a central processing unit to detect a violation.

In the offline operation mode, even though the computer vision methods presented in this paper can replace road side officers for HOV/HOT lane enforcement, in practice, a human is often required in the loop to avoid the serious public relations problem of issuing improper citations. The imaging-based enforcement system proposed in this paper, however, provides an opportunity to significantly reduce human involvement required for HOV/HOT lane enforcement, which in turn reduces the cost for the overall enforcement system. The proposed enforcement system groups the captured HOV/HOT images into three categories to identify clear violations with high positive confidence score, clear non-violations with high negative confidence score, and images with scores at the boundary. The images in the third category go to human review while the images in the first two buckets are concluded only based on the computer vision method. For a fully automated enforcement system, the license plate of the violator can be extracted from the front view images. If capturing license plate from the front view camera is not possible due to camera configuration, contrast, state/country regulations etc., a third camera can be installed in the scene to capture the rear portion of a passing vehicle and the license plate. This camera is triggered when the front or side view camera is triggered using the induction loops already installed beneath the road.

It is known that occasionally some people try to deceive the occupancy detection system by placing a face photo or mannequin in the front seat, which may not be detected by our proposed enforcement system. In general, however, HOV violators using fraudulent means typically constitute only a minor fraction of the total number of violators, which we have also observed in our experimental data. A skin detection based solution [18] using a multi-band camera provides more robustness against fraud detection. While this method provides more robustness against mannequin or fake photos, it may fail when passengers' faces are not visible in the images, which is often the case when the passenger puts the sun visors down. We believe that a system as combination of our proposed method in this paper and a multi-band camera based solution [18] can provide higher robustness and performance for occupancy detection. This combined solution, in turn, will increase the cost of the system.

VII. CONCLUSION

In this paper, we proposed an imaging-based approach for augmented HOV/HOT lane enforcement to detect passenger compartment violations using two NIR cameras installed along the road side and on overhead gantries to capture front and side view images. This study has found several key findings that are unprecedented in the literature for an imaging-based unified HOV/HOT lane enforcement system. A novel DP-based window detection method enables accurate localization of the windshield and side window regions of vehicles in the captured NIR images. Using the landmarks in the localized windshield regions, ROIs for each task (i.e., occupancy detection, cell phone and seat belt violation detection) are automatically extracted. Performing image classification in the extracted ROIs using locally aggregated descriptors show significant improvement over classical detection-based techniques for occupancy and seat belt violation detections. The novel half-face architecture proposed for cell phone violation detection improves the performance compared to full face architecture.

REFERENCES

Yusuf Artan (M’07) received the B.S. degree in electrical engineering from Rensselaer Polytechnic Institute, Troy, NY, USA, 2003, and the M.S. degree, in 2005, and the Ph.D. degree in electrical engineering from Illinois Institute of Technology, Chicago, IL, USA, in 2013. From 2013 to 2014, he was with Xerox Research Center, Webster, NY. He is currently a member of the Image Processing Team at Havelsan Incorporation, Ankara, Turkey. His research interests include computer vision, machine learning, and pattern recognition.

Orhan Bulan (M’07) received the B.S. degree in electrical and electronics engineering from Bilkent University, Ankara, Turkey, in 2005, and the M.S. and Ph.D. degrees in electrical and computer engineering from the University of Rochester, Rochester, NY, USA, in 2007 and 2012, respectively. His research on his doctoral studies focused on multimedia security, steganography, digital forensics, and hardcopy data hiding. He is currently a Research Scientist with Palo Alto Research Center, Webster, NY. His current research interests include computer vision, domain adaptation, video-based object tracking, machine learning, and video analytics for surveillance and other future applications. He serves as a frequent Reviewer for the IEEE Journal of Selected Topics in Signal Processing and SPIE Journal of Electronic Imaging. IEEE TRANSACTIONS ON IMAGE PROCESSING, and IEEE TRANSACTION ON INTELLIGENT TRANSPORTATION SYSTEMS. He is a Member of the IEEE and Society of Photo-Optical Instrumentation Engineers.

Robert Loo (SM’08) received the A.A.S. degree in optoelectronic technology from Mosques Community College, Rochester, NY, USA; the B.S. degree in photographic science from Rochester Institute of Technology (RIT), Rochester, in 1985; the M.S. degree in electrical engineering from the University of Rochester, Rochester in 1987; and the Ph.D. degree in imaging science from RIT in 1993. In 1981, he joined Xerox Corporation. He is currently a Research Fellow and an Area Manager with Palo Alto Research Center, Webster, NY, a Xerox Company. In 2002, he passed the U.S. patent bar. A significant portion of his earlier career was devoted to development of image processing methods for color digital printing. His has publications and many patents in the areas of digital image processing, image enhancement, computer vision, imaging systems, and optics. His publications include a book on enhancement and restoration of digital documents, and book chapters on digital halftoning and digital document processing. His current research interests include leading an organization and projects into new video processing and computer vision technologies that are relevant to transportation and healthcare. He currently serves as an Associate Editor for the Journal of Electronic Imaging and has been an Associate Editor for Real-Time Imaging and IEEE TRANSACTIONS ON IMAGE PROCESSING. He is a Fellow of SPIE.

Peter Paul (M’85) received the B.S., M.S., and Ph.D. degrees from Case Western Reserve University, Cleveland, OH, USA. He is currently an Area Manager and a Principal Scientist at the Systems Laboratory at Palo Alto Research Center (PARC), Webster, NY, a Xerox Company. In addition to this role, he also leads a Retail Innovations Research Team, with heavy focus on video analytics applications. Prior to PARC and Xerox, he was at Raytheon Systems Company, Los Angeles, CA, USA, working on radar systems. His research interests include a wide variety of system science disciplines, such as signal, image, and video processing, computer vision and machine learning, and large-scale feedback systems. He was the main inventor and scientist responsible for the development of the Xerox Vehicle Detection System, which uses computer vision technology to enforce the rules of carpool lanes. In addition to several publications, he has been issued 63 U.S. patents and has 40 additional patents pending.
From: withheld under section 9(2)(a) of the Official Information Act 1982
Sent: Thursday, 14 April 2016 4:21 p.m.
To: Tommy Parker; Bob Alkema; Lisa Rossiter; Bruce Richards; Raewyn Blearley; Hannah

RE: Notes from Automated Enforcement/Compliance meeting & request for workstream members

Hi Margaret,

will be the Ministry contact.

Cheers
Brent

Brent Johnston
Manager - Land Transport Safety
Ministry of Transport - Te Manatu Waka
Hi everybody

Attached are my draft notes from the meeting last week. Please let me know any additions or corrections.

**Strategic Direction Workstream involvement**
I will be working on project planning for the Strategic Direction workstream next week. It would be helpful if I could have confirmed contacts from the Ministry, Police and ACC for this work – to attend meetings, review documents, provide your organisation’s perspective etc. At this stage we are still planning to complete the bulk of the strategy development by the end of 2016. Please could you let me know by 22nd April.

Many thanks
Margaret

Margaret Dugdale / Principal Advisor, Strategy Team
Strategy, Communications and Performance

National Office / Victoria Arcade, 50 Victoria Street,
Private Bag 6995, Wellington 6141, New Zealand

Safer Journeys

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Subject: FW: Confirmed Date: Automated Enforcement Sector Wide Meeting
Location: Chews Lane Meeting Room 2.32 (Seats 12, Datashow)
Start: Thu 7/04/2016 1:00 PM
End: Thu 7/04/2016 3:30 PM
Show Time As: Tentative
Recurrence: (none)
Meeting Status: Not yet responded
Organizer: Judy Thompson

When: Thursday, 7 April 2016 1:00 p.m.-3:30 p.m. (UTC+12:00) Auckland, Wellington.
Where: Chews Lane Meeting Room 2.32 (Seats 12, Datashow)

Note: The GMT offset above does not reflect daylight saving time adjustments.

~~~~~~~~~~~~~~

Hi Brent,

This was sent to Leo and me, I am not sure if he has mentioned it to you but you may be a better person to go to this than myself.

Thanks

~~~~~~~~~~~~~~

----Original Appointment----
From: Judy Thompson
Sent: Tuesday, 8 March 2016 4:31 p.m.
To: Judy Thompson, Leo Mortimer
Subject: Confirmed Date: Automated Enforcement Sector Wide Meeting
When: Thursday, 7 April 2016 1:00 p.m.-3:30 p.m. (UTC+12:00) Auckland, Wellington.
Where: Chews Lane Meeting Room 2.32 (Seats 12, Datashow)

Hi All

Looks like most of you are available for this date/time so I am sending invite out to get it into your calendars.
The meeting will be held at:

NZ Transport Agency
Level 2 - Chews Lane Precinct
50 Victoria Street
Wellington

We will circulate an agenda closer to the date.
Thanks
Judy

Judy Thompson
Planning and Investment – Dunedin
Find the latest transport news, information, and advice on our website: www.nzta.govt.nz

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Hi Mark

As you know, I won't be here next week.

You indicated it will be on the agenda for the following week.

Leo

From: [Redacted]  
Sent: Friday, 19 February 2016 12:25 p.m.  
To: [Redacted]; Leo Mortimer; Lesley Reidy  
Cc: Visiting Drivers  
Subject: Innovative technology for road safety/visiting drivers  

Hi

withheld under section 9(2)(a) of the Official Information Act 1982

Can you an item on the agenda for Minister Foss's next meeting with MoT officials titled 'Callaghan Innovation and technology for visiting drivers' please.

Leo — Minister Foss is meeting with the Mayor of Central Otago District Council in Alexandra 23 March and is keen to announce something about technology to reduce visiting driver crashes. Can you be prepared to discuss this at the meeting please.

Kind regards.

withheld under section 9(2)(a) of the Official Information Act 1982

From: [Redacted]  
Sent: Friday, 19 February 2016 11:36 a.m.  
To: [Redacted]  
Cc: Matthew Kenning; Leo Mortimer  
Subject: Innovative technology for road safety  

Hi

withheld under section 9(2)(a) of the Official Information Act 1982

Late last year Ministry of Transport (MoT) officials met with Minister Joyce and Minister Foss on investigating longer term technical ITS type solutions to reduce crashes involving visiting drivers. It was suggested MoT meet with Callaghan Innovation to get a better idea of how it may be able to assist.
The Ministry has had discussions with Callaghan Innovation about the application process and how they may be able to be involved. In those initial discussions, Callaghan Innovation indicated it could not see how it could be of assistance because the focus of the funding is directed toward business applications.

I understand you spoke with Minister Foss's Advisor and that MBIE have an Innovation Group/Team that may be able to assist MoT with this work. Can you assist with connecting MoT with MBIE please.

The MoT contract for this project is Leo Mortimer, Manager Land Transport Safety who can be contacted on [Redacted] or [Redacted]

Many thanks.

withheld under section 9(2)(a) of the Official Information Act 1982
Thanks for further assessing these issues Rob. I will move both into policy investigation in the attachment to the Cabinet paper. In terms of the OSRS amendment I am aware of the background to this rule and the fact that it has not yet come into force. I understand the need for a review but we need to set some deadlines so that a decision can be made either way. I will be reporting to our leadership team each quarter on progress with the rules programme and proposed additions/deletions. The first report will be in September and is an appropriate deadline to complete the review. I’ll leave you to talk this through more with and Leo.

Regards,

Megan

Hi Megan,

Regarding both proposals, I can advise that we would like to move both these items back into a policy investigation phase for the reasons discussed below:

- **Vehicle Compliance Rule Amendment** – The proposed amendments to the Vehicle Standards Compliance Rule were initially included on the programme some time ago, which was done so in anticipation of further issues being identified during the course of the Vehicle Licence Reform and other associated work. However, the issues identified during this work still require further review to establish their extent and determine how best they should be addressed before any rule change can be proposed.

- **Operator Safety Rating Rule Amendment** – The proposed amendment was to clarify incorrect descriptions in the Rule as well as address inflexible provisions related to the publication of ratings. This was to then enable the Rule to be brought into force and the generation and publication of ratings be formalised. However, a number of issues need to be addressed before ratings are made available to a wider public audience, including data issues resulting from changes to CoF Inspection requirements and the collection of roadside inspection data by Police. We are also currently completing a review of the rating algorithm, which will look to evaluate performance against expected performance and establish whether any adjustments are required to ensure ratings produced by the system are an accurate reflection of an operator’s safety.

Thank you for the additional time to come back to you regarding the proposals and am happy to discuss further if required.

Kind regards

Robert McIlroy / Senior Policy Advisor
Operational Policy Team
Direction Unit, Access and Use
Hi, as discussed on the phone end of next week is ok but I won't be able to extend after that.

Thanks, Megan

Hi Megan,

There is continued discussion on this side of the fence regarding the two proposed Amendment Rules (VSC and OSR). I note you have taken the pragmatic approach and included these on the Rules programme already, would this enable us further time to work on the issues and come back to you?

Apologies for the delay.

Kind regards

Robert McIlroy / Senior Policy Advisor
Operational Policy Team
Direction Unit, Access and Use

Hi Megan,

Thank you for your email on Friday. Michael is on leave for the next fortnight but Rob McIlroy and I are working through your questions and will get back to you by the end of the week.
Hi Angela and Michael, below are our comments on the draft PIRAs. I will manage this process as I will need the complete PIRAs to respond to any questions from the Minister or EGI on the proposed rules programme. Once the PIRAs are complete we will provide them to Treasury for their advice on whether a RIS is required. So that the PIRAs are a standalone document can you provide the information highlighted below in the PIRAs themselves. Legal hasn’t reviewed the draft PIRAs yet as Judy Voiye is on leave. I will follow this up.

Vehicle Standards Compliance Rule

1. Are the changes to site approvals needed before 1 December?
2. How significant are the risks of legal challenge for site approvals that are currently being done administratively?
3. Pg 5 there needs to be explanation as to why non-regulatory options are not feasible. There should be an explanation why it is not an option to continue to manage the issues administratively.
4. What are the impacts of taking into account operator safety ratings for CoF inspection frequency changes?
5. Are the impacts on vehicle inspecting organisations, fleet operators and ag vehicle operators positive or negative?

OSR

1. Why is a Cabinet paper needed if there are no significant impacts?
2. Is ‘excessive prescription’ the correct description of the problem? One reason we have heard that change is needed is that ‘more flexibility’ is wanted to remove clutter in the ratings by allowing the agency not to publish ratings for small or individual operators who the public will have little interest in. Please clarify the problem definition.
3. Problem definition p3 ‘errors in the Rule’ – needs clarification as its not clear what the errors are
4. How can ratings be skewed or incorrect – is the process/algorithm faulty?
5. Does NZTA want ratings for some types of operators for whom publishing would not be relevant or of interest to the public to be omitted?
6. We do not agree that a Cabinet paper is needed as of now, but we may decide one is needed if significant impacts or risks are identified during the Rule process.
In terms of timeline, I will need the revised PIRAs before the end of next week.

Thanks, Megan

From: Angela Duncan
Sent: Thursday, 26 June 2014 10:52 a.m.
To: Megan Beecroft
Cc: Dave Whiteridge; withhold under section 9(2)(a) of the Official Information Act 1982
Subject: RE: PIRAs for Vehicle Compliance rule amendment and OSRS rule amendment proposals

Thank you for your reply, Megan, and for considering the draft PIRAs. As these are Access and Use projects, I will defer to Michael to answer your questions and address concerns if they relate to policy but would be happy to answer questions related to legal process or legal issues (eg the process for CoF site approval and the legal opinion related to that). So, if you send the questions to us both, we will do our best to answer them.

We will look forward to receiving the revised Cabinet paper today.

Angela

From: Megan Beecroft
Sent: Wednesday, 25 June 2014 5:13 p.m.
To: Angela Duncan
Cc: Dave Whiteridge; withhold under section 9(2)(a) of the Official Information Act 1982
Subject: RE: PIRAs for Vehicle Compliance rule amendment and OSRS rule amendment proposals

Hi Angela, thanks for sending through the PIRAs. We have reviewed them and I have met with Andrew. There are gaps and questions with both PIRAs (mainly the Vehicle Compliance rule amendment) and at this stage we aren’t convinced rule changes are needed. However, we have decided to take a pragmatic approach to enable EGI consideration of the programme before the end of July and will include them in the rules programme. I will provide you with our questions and concerns separately so you can provide us with revised PIRAs. For us to support any further stages of the rule amendments we will need to have robust PIRAs and the advice to the Minister will need to provide compelling cases for change.

I acknowledge that some aspects of the Regulatory Plan and Rules Development process could have been better so I will be holding a lessons learned session and will be keen to get input from you and the other agencies. I am out of the office from tomorrow lunchtime (back Monday) but have asked [redacted] to provide you with the revised cabinet paper tomorrow. I will check my emails.

Thanks, Megan
From: Angela Duncan
Sent: Tuesday, 24 June 2014 11:50 a.m.
To: Megan Beecroft
Cc: Dave Whiteridge; Michael Cummins
Subject: RE: PIRAs for Vehicle Compliance rule amendment and OSRS rule amendment proposals

Megan,

Attached are the draft PIRAs for the proposed OSR and VSR Amendment Rules, as requested on Friday; we would be happy to discuss any of the content.

We look forward to hearing the outcome of your meeting with Andrew.

Angela

---

From: Angela Duncan
Sent: Tuesday, 24 June 2014 9:01 a.m.
To: Megan Beecroft
Cc: Dave Whiteridge; Michael Cummins
Subject: RE: PIRAs for Vehicle Compliance rule amendment and OSRS rule amendment proposals

Hi Megan,

We’ve completed both PIRAs and will send them to you this morning.

Angela
From: Megan Beecroft
Sent: Tuesday, 24 June 2014 9:00 a.m.
To: Angela Duncan; Michael Cummins
Cc: Dave Whitenidge
Subject: PIRAs for Vehicle Compliance rule amendment and OSRS rule amendment proposals

Hi, I am booking time with Andrew Jackson over the next few days to discuss and review the PIRAs and cabinet paper. I just wanted to check how you are going with the PIRAs and if you are on track to get them to me by cop today?

Thanks,
Megan

Megan Beecroft
Policy Manager - Programmes
(Transport Regulatory Programme, Business Owner Stakeholder Engagement)
Ministry of Transport – Te Manatū Waka
Yes Richard I stand corrected.

We have two sets of mandatory signage stating "DG's Prohibited" prior to the point of no return.

The Bylaw specifies the area of prohibition (at which points an offence has taken place), which is prior to the tunnel.

The Waterview alternate route for DG (and OH) vehicles is the current designated DG and OH route.

Thank-you for your comments.

Hopefully this all makes sense and it water tight now?

Regards,
Andrew.

Sent from my iPhone

On 15/04/2016, at 5:47 pm, Richard Bean > wrote:

A practical problem with making it an offence to pass a "Dangerous Goods Prohibited" sign is that the RCA must install regulatory signs advising of the prohibition, in advance of the point the prohibition applies, to allow prohibited vehicles to take an alternative route. But if the offence is passing the sign, then as soon as a driver passes the sign informing them of the prohibition, an offence will be committed. That is plainly unreasonable. If you install signs in advance of the prohibition requiring DG vehicles to take an alternative route, then that does not inform drivers of the DG prohibition (so the sign advising of the DG prohibition won't exist). Further, stipulating a mandatory alternative route will require another bylaw and we will be back where we started, especially if you want it to be an offence to pass a sign advising drivers to follow the alternative route.

The only reasonable offence that a simple bylaw can impose, is to prohibit entering the restricted section of road. The sign is necessary to advise drivers, but it is not practical to make it an offence to pass the sign. The offence can only be for driving on the restricted section of road.

Cheers
Richard

Hi Kevin,
From: Kevin O'Kane
Sent: Friday, 15 April 2016 2:34 p.m.
To: [REDACTED]; Andrew Allen; Richard Bean; [REDACTED]; [REDACTED]; Andrew Musgrave
Cc: Bruce Currie; Richard O'Reilly
Subject: RE: Enforcement of proposed Dangerous Goods Rule

Current thinking is that I will draft a briefing today for Celia Patrick, which she will take to her next meeting with the manager of the Road Policing Division.

One of the matters that has become a little clearer is that, as far as we can ascertain, any breach of the current tunnel bylaw requires NZ Police to bring an information before a court — it’s not an identified infringement offence. The proposal therefore makes the NZ Police task easier/ simpler, rather than imposing new demands. If this is not correct, can someone please update me ASAP.

Note that the tyteltun tunnel has (NZTA) enforcement officers appointed so it works differently.

I think we can also assure NZ Police that we are not seeking an additional or dedicated resource. I will, once it’s agree, copy the briefing notes across.

Kevin

From: [REDACTED]
Sent: Monday, 11 April 2016 2:07 p.m.
To: Andrew Allen; Kevin O'Kane; Richard Bean; [REDACTED]; [REDACTED]; Andrew Musgrave
Cc: Bruce Currie
Subject: RE: Enforcement of proposed Dangerous Goods Rule

Hi all
It seems to us that the better response to Police would be to meet and discuss, rather than by exchange of correspondence. We agree with you that there does seem to be mixed messages coming from Police around enforceability of proposals relating to bylaws.

However, we are uncomfortable with a public release of the Yellow draft given that Police are suggesting that the draft is substantially flawed from an enforcement perspective. It seems to us that this is something that ought to be resolved now, not later. Our Minister would not react well to being asked to sign a Rule with this background – and the reality is we would not put it in front of him to do so.

Our view, in summary (in terms of Police’s comments, and the email response):

- **Rationale for change**: We have no issue with the rationale. Police may misunderstand here – the higher penalty regime is about connecting the act to a breach of the Rule. We don’t think it is correct to say “the infringement amounts have not as yet been determined” – there is a clear Cabinet decision that agrees to specific infringement penalties. Any change to these would need to be justified and taken back to Cabinet.
- **Enforcement issues**: The Police list six concerns relating to the enforceability of the proposed Rule. We agree or accept the first four of them. We have no particular comment regarding the last two matters (Police resourcing, justice sector pipeline)
- **Non-traditional enforcement option**: No comment.
- **Police’s preferred approach**: We agree with you that this is not appropriate.

Regards

From: Andrew Allen
Sent: Monday, 11 April 2016 9:15 a.m.
To: Kevin O’Kane; Richard Bean; [REDACTED]; Andrew Musgrave
Cc: Bruce Currie
Subject: RE: Enforcement of proposed Dangerous Goods Rule

Good morning all,
Unfortunately, Bruce is not able to be here today. I suggest we postpone the meeting that he has set up for 11 am. Bruce can reconvene once he gets back.

In the meantime, you might like to make comments on the draft response to Police in the following email.

Regards
Andrew Allen

Andrew Allen / Legal Counsel
Legal Services Team
Organisational Support

National Office / Victoria Arcade, 50 Victoria Street,
Private Bag 6995, Wellington 6141, New Zealand

From: Bruce Currie
Sent: Friday, 8 April 2016 4:19 p.m.
To: Andrew Allen; Kevin O'Kane; Richard Bean; Andrew Musgrave
Subject: RE: Enforcement of proposed Dangerous Goods Rule

Hi Project Team,

For Monday's meeting here is a first rough go at a response which we can build on. Please bring this along with any suggested changes you may have.

Cheers
Bruce

Hi

Thank you for the Police feedback specified below. The joint Ministry-Agency project team has now considered this feedback and its response is detailed below.

Rationale for change

The proposals do open the door to the possibility of placing offenders before the court and penalty amounts of $2,500 and $10,000. While we acknowledge this path is unlikely to be used frequently, the fact that it is possible provides the Agency the ability to inform industry of a significant sanction to influence behaviour in a preventative sense. This is a key part of our regulatory approach here which needs to be highlighted. Additionally, infringement amounts (without court involvement), have not as yet been determined and there remains scope to have these increased moderately from the $500 and $1000 amounts currently suggested – this aspect is under active review.

Enforcement issues with current proposal
- We understand there have been issues around the legality and currency of certain bylaws. However, in this case the restriction or prohibition proposed is already a successfully implemented approach under the Act and a mere extension of this as proposed is not seen as being problematic. The element of a risk assessment required in making the bylaw is aligned with how RCAs currently assess the need for restriction or prohibition and make bylaws so we do not see this as a threat to legality.
- The terms of the restriction, any conditions, classification or quantity of dangerous goods, and the specific location on which it applies, would all need to be specified in the bylaw. This is the same as the current situation applying to the Wellington tunnels bylaw, and the Christchurch – Lyttelton tunnel bylaw.
- The ingredients are that there must be a bylaw and there must be a sign. This is fair, efficient and appropriate.
- In the case of the Waterview tunnels infrastructure enabling enforcement includes: ....... In the case of restrictions or prohibitions more generally on roads we see no difference in how other traffic offences are enforced.
- Enforcement efforts, baseline etc. is being addressed at a higher level between the Agency and Police. Also, keep in mind that the proposals only enable penalty amounts (and possibly increased infringement amounts) over the status quo. Without the proposals a bylaw would still be made for Waterview and enforcement of that bylaw remains an activity Police can engage in.
- As mentioned above the frequency of this, given the very low likelihood of offending, is negligible. It is important to remember that we are talking about a very low frequency event /level of offending (but potential high risk consequences).

Non-traditional enforcement option

- [Andrew M to update on camera enforcement ]
- [“] The penalty for failing to display placards is considerably higher ($7,500/$37,500) than that proposed for a tunnel offence, so the assertion that drivers will remove placards to avoid detection is not very likely.

Police’s preferred approach

Proposed approach is disproportionately severe restriction on public access to roads – doubtful that the Minister is empowered by the Act to make such rules. There are few tunnels (Waterview will be number 5) in which a restriction is required; only needed in those tunnels that are long and busy enough to have elevated levels of risk. Under the preferred approach there would be more excepted tunnels than tunnels in which the rule applied.

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the Agency has received conflicting messages from Police HQ and Police CVIU Auckland about the enforcement of the proposals with regard to application on the Waterview tunnels. Taken with our views expressed above we are comfortable continuing with the next phase of Rule development – wider industry and public consultation. We will use this wider consultation phase to further test some of the concerns you have raised and use the feedback to help improve the intent of the proposals.

We will add your contact details to the list of recipients for notification of when the proposal is released to the public. We are anticipating that this will occur by the end of this week.

 Regards
Hi Andrew,

Please find Police’s response to the proposed changes as per below. If you could please keep us informed of how the proposed Rule change progresses (if at all), it would be greatly appreciated.

Happy to discuss further.

Many thanks

[Redacted]

Police feedback

Rationale for change

Police questions the rationale for the amendment to the Land Transport Rule: Dangerous Goods (LTR:DG). If the purpose of the change is to increase the penalty for a breach of bylaw, then this is unlikely to be realised. Higher end penalties will not be imposed, because Police generally issues infringement notices for breaches of the LTR: DG.

Placing offenders before the court via a charging document for offences under the Rule are the exception rather than the rule, and would have to be warranted based on the significance of the offence. Establishing this significance is complicated by the inability for Police to interrogate previous infringements to establish whether the current offence is part of a pattern of offending. Courts would have significant concerns about Police decisions to prosecute for infringement-level offences, unless there were exceptional circumstances to warrant it [refer to the Solicitor-General’s Prosecution Guidelines 2013].

Enforcement issues with current proposal

There would be a number of challenges in enforcing the amendment as proposed. A brief outline of some of the more substantial issues is provided below:

- Ability to enforce would be dependent on the legality and currency of the bylaw. We have already seen issues with this in terms of bylaws relating to speeds and road signs.
- Police would need to establish the nature of the bylaw before any enforcement action was taken.
- The amendment increases the ingredients required to prove an offence.
- Lack of appropriate roadside infrastructure to undertake this enforcement either proactively or reactively.
- Police is not in a position to increase enforcement efforts within current baseline.
- There would also be concerns around the impact that increased prosecutions (whether elected by the defendant or by way of charging document) through the courts will have on the justice sector pipeline.
Non-traditional enforcement option

Police understands that the NZTA is considering alternative enforcement delivery options – specifically, the use of cameras. Police would like to pre-empt any discussion around this option by identifying some significant enforcement challenges as provided below:

- Establishing whether a vehicle actually contained a dangerous good(s)
  - For example, a vehicle may have displayed a dangerous goods placard unnecessarily OR
  - A vehicle may have carried dangerous goods, but failed to display a placard (in which case it would not be identified).
- The onus would be on the operator to prove that the dangerous goods were not being transported, or if they were, establish who the driver was at the time. This would increase the administrative churn on operators, and on Police to establish liability.
- There would be an anticipated increase in the frequency of dangerous goods being transported with no placards, to avoid identification.

Notwithstanding the challenges identified above, there would still be a considerable impact on Police resources for (a) issuing infringements through the processing of camera images, and (b) establishing the conditions described above – eg. sending s118 letters to operators before being able to issue the infringement.

Police’s preferred approach

Police believes that the intent of the Rule change could be better achieved through incorporating a general provision into the Rule prohibiting dangerous goods in all tunnels unless exempted by the road controlling authority, with a sign displayed to this effect.

The benefit of this approach is that it would reduce the number of ingredients required to establish an infringement offence, while making enforcement action more feasible when offences are identified.

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Subject: 10.00am - National Road Safety Committee Meeting
Location: Te Waka Boardroom - Level 6/SAS Tower
Start: Thu 3/12/2015 10:00 AM
End: Thu 3/12/2015 11:30 AM
Recurrence: (none)
Meeting Status: Accepted
Organizer: Mike James
Required Attendees: National Road Safety Committee; [Surname Redacted] Lucy, Malcolm
Categories: Orange Category

withheld under section 9(2)(a) of the Official Information Act 1982
11:00am - National Road Safety Committee Meeting
Te Waka Boardroom - Level 6/SAS Tower

Thu 18/06/2015 11:00 AM
Thu 18/06/2015 12:00 PM

(none)

Meeting organizer

Mike James
National Road Safety Committee;

Martin Matthews; 'Scott Pickering'; 'Geoff Dengerfield'; 'Malcolm Alexander'; 'CLIFF, David'; 'BUSH, Michael (Mike)'; Keith Bolton; 'Keith Bolton';

Te Waka Boardroom - Level 6/SAS Tower

withheld under section 9(2)(a) of the Official Information Act 1982
| Subject: | 8.30am - National Road Safety Committee Meeting |
| Location: | Boardroom, Ministry of Transport |
| Start: | Thu 18/09/2014 8:30 AM |
| End: | Thu 18/09/2014 10:30 AM |
| Recurrence: | (none) |
| Meeting Status: | Meeting organizer |
| Organizer: | Mike James |
| Required Attendees: | National Road Safety Committee; 'Sid Miller'; [Redacted] |
| Optional Attendees: | Martin Matthews |

withheld under section 9(2)(a) of the Official Information Act 1982
From: withheld under section 9(2)(a) of the Official Information Act 1982
Annie Hamilton on behalf of Harry Wilson
Sent: Tuesday, 7 June 2016 4:30 PM
To: Mike James
Subject: Accepted: FW: National Road Safety Management Group

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Released under the Official Information Act
**Subject:** National Road Safety Management Meeting  
**Location:** Te Waka Boardroom - Level 6/SAS Tower  
**Start:** Wed 24/02/2016 10:00 AM  
**End:** Wed 24/02/2016 12:00 PM  
**Recurrence:** (none)  
**Meeting Status:** Accepted  
**Organizer:** Mike James  
**Required Attendees:** Dave Trappitt;遗漏名字; Lisa Rossiter; Phil Parkes; Anna Wilson-Farrell; Delaney Myers; Leo Mortimer; Brent Johnston  
**Optional Attendees:** Ernst Zollner  

*withheld under section 9(2)(a) of the Official Information Act 1982*
Some more helpful material from Mike Noon

Ernst

Begin forwarded message:

From: Mike Noon
Date: 22 April 2015 10:22:29 NZST
To: Ernst Zollner
Subject: Conference The Future of Road safety Manchester 2014

Ernst

After dropping you a note on the speed trip this morning I remembered I had some notes from a road safety conference that Ben attended in Manchester UK last year and that this had some speed references. Anyways just revisited his report and attach this with some areas highlighted in yellow. Has some interesting approaches and information in it I wanted to share so here it is

Cheers mike

Mike Noon
General Manager | Motoring Affairs
The New Zealand Automobile Association Incorporated
Level 12, 342-352 Lambton Quay, Wellington 6011 | PO Box 1, Wellington 6140

Check out the AA’s 2014 election calls
The trusted voice of over 1.4 million motorists – read about AA Advocacy

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The Future of Road Safety Conference 2014, 10 December 2014,
University of Salford, Manchester

Presentation summaries

Road safety – where next? David Davies, Executive Director, Parliamentary Advisory Council on
Transport Safety

(This was a keynote presentation in my view)

- PACTS consist of peers, MPs, safety professionals, businesses and user groups. Aims to
  provide impartial, balanced, evidence based analysis and recommendations
- Inequalities in Killed and Seriously Injured (KSI). Poor more likely to be victims
- Deaths in UK 5 times lower mid 60s peak. Uk road deaths 2nd best in OECD per 100,000
- Difficult to conclusively pinpoint exact cause of reductions. Combination of socio-economic
  factors (economic trends, traffic volumes) and safety interventions (road/vehicle
  engineering, education, enforcement)
- 25,000 KSIs still per year. This high level of trauma would not be tolerated in other spheres
- Road trauma is the largest cause of accidental death for people aged 5-25
- 1,000 deaths per year predicted by 2030
- Current UK Government does not agree with setting road safety targets
- 2015 and beyond: much smaller public sector, devolution of power to the regions, private
  sector delivering safety innovations and technology, road safety a low political priority due
  to bigger socio-economic issues (austerity, immigration etc.)
- Huge demand in UK for lower residential speed limits (20mph) and cycle lanes. However, the
  lower speed limits do not necessarily result in lower casualty rates
- PACT wants: lower drink drive limit, road safety targets, better vehicle safety standards,
  better work related driving assessment of risk and a commitment to the Safe System
  approach

The Changing Context for Road Safety in Great Britain,

Professor Richard Allsop, Centre for Transport Studies, University College, London

(This was also a keynote presentation in my view)

- 3 decades of sustained progress. However, we are now in “less settled” times
- Important to help developing countries avoid going through the road trauma western
  nations have endured
- Post collision response is a huge challenge in countries where medical facilities are limited
  and resources are stretched
- EU 2020 target: Less than half the road deaths of 2010
- European Commission has a vision of close to zero road deaths by 2050
- UK’s “excellent safety record” is not as good as it seems: For example the UK has:
- More than twice the pedestrian deaths of the best performing countries despite its citizens walking less
- The 4th best cycle death rate but this is still poor when you consider how little people cycle in UK compared to other EU nations

- In summary, the UK’s roads are therefore among the safest in Europe per million because its risk to motor vehicles is low enough to offset a pedestrian death rate that is double Europe’s best
- However, UK wants more people to cycle and walk which, without sufficient resourcing and design the death rate will increase. UK therefore not expected to meet the EU 2020 target until around 2030
- UK fails to count as road casualties many pedestrians and cyclists who are seriously injured in collisions with a single motor vehicle. There is no legal obligation to report these incidents to Police
- Important to count all deaths and seriously injured to better inform road safety management
- Current UK Government Vision is “to ensure Britain remains a world leader on road safety”. This is a weak vision as it relies on others to set the pace. UK needs to lead and not just “keep up”
- Sweden’s Vision Zero is commendable. However, it is based on the misconception that no trade-off between life and limb and the benefits of road transport can be acceptable. A trade-off should and will continue to occur
- It is not inherently necessary to accept Vision Zero to adopt the Safe System Approach
- The increasing focus on promoting “active travel” may (initially) increase the number of KSI. However, safety measures can be ugly and obtrusive
- Better health and safety on workplace use of roads is needed
- As we continue to reduce KSI, the intervention costs per KSI prevented will likely increase as may the intervention’s intrusiveness
- We can’t wrap ourselves in cotton wool as this damages quality of life. There are trade-offs that need to occur. “Safety is for living – living is more than just keeping safe”
- The more we succeed in bringing down this ratio, the harder people will expect us to look at the cost and intrusiveness of further reducing death and injury on our roads compared with the cost of reductions elsewhere. The point being made by the Professor is that road safety experts/practitioners need to be aware of this rather than focus solely on the very remote prospect of Vision Zero being achieved. (However, I, perhaps a little naively, have a high degree of optimism/confidence in the ability of driverless cars etc to cut the road toll significantly further)

Strategic Road Network in England, Stuart Lovett, Safety Action Plan Coordinator, UK Highways Agency

(This was also a keynote presentation in my view)
From 1 April 2015 the Highways Agency will become a new public company called Highways England (HE).

Budget of £15 billion GBP over next 5 years. 135 million GBP dedicated road safety fund.

HE adopts a Vision Zero style statement “no-one should be harmed on the strategic road network”.

Overarching principle: A forgiving system. Seeks to manage the environment and neutralise the risks. A new star rating for roads. Aim to have all roads minimum 3 star rated by 2020.

**UK HE strategy therefore has a lot in common with Safer Journeys**

Focus is on shifting to proactive incident prevention to achieve “vision zero”

- The Future 2040: “Smart Motorways” with state of the art prevention mechanisms and driver warning/information systems (e.g. eliminating conflicts, safe verges, intelligent lighting; make all single roads dual carriageways where possible)
- Goal is to improve compliance rather than increase enforcement (e.g. send warning letters to “lane huggers” hard shoulder abusers, cell phone violators etc). I really liked this approach and am very keen to follow up with Stuart to get more information on this.

**Reducing Driver Skill and Attitude Deficits, Emeritus Professor Stephen Stradling, Transport Research Institute, Edinburgh Napier University**

(This was also a keynote presentation in my view)

- “Smart roads and Smart drivers”
- Retuning driving offenders through diversion from prosecution courses such as Speed Awareness, Driver Alertness, Driving 4 Change, What’s Driving Us?
- The international evidence for Graduated Driver Licensing is compelling
- Most drivers who break the rules should be helped and not punished. It’s a failure of “initial socialisation or training” we need more of this in NZ. We should push the NDORS concept to the decision makers
- Driver pays for their own treatment
- Estimated that: around ½ of UK drivers are speed limit compliant; 1/3 are remedial and can be “treated”; 1/6 are dangerous and need to be slapped and punished!
- Different “types” of speeders exist (e.g. late complier, partial manipulator, nervous conformer, defiers) This was very academic but quite fascinating and could have some practical benefits for course development and speed camera design. I can perhaps discuss further when I return
- 2 types of driverless cars: high automation – cars with a qualified driver who can take control of the driverless cars; full automation – vehicles where there is no need for a driver.

**WARNING:**

“High automation driverless cars will require CONTINUOUS PARTIAL ATTENTION maintaining a continuous readiness to intervene. Might be straightforward for young persons used to monitoring a variety of platforms for high valence signals; for the rest of us, forced into low engagement with the primary task of driving, it will be VERY TIRING and DANGEROUS”
This is a common concern isn’t it? I have a bit more faith that the technology companies are fully aware of these risks and will seek to mitigate them but time will tell. Fascinating area.

Rural Young Drivers, Tanya Fosdick, Senior Analyst, Road Safety Analysis Limited

- Drivers under 25 are disproportionately involved in road crashes
- Riskiest time is in 1st year of driving
- Tend to drive older cars with less crash protection
- Often multiple occupant casualties
- Occur at night and weekends
- Bends, wet roads and darkness are rural risk factors
- Rural vs urban young drivers: obtain license earlier, lower levels of deprivation, higher sensation seeking, rural roads seen as more “fun” and higher alcohol dependency
- UK Govt has put plans for a Graduated Driver Licensing Scheme “on hold”. Claimed that added requirements and time to achieve full unrestricted license would affect young rural people’s access to employment
- Possible solutions: develop rural specific driving tests, improve public transport, install alcohol interlocks in rural drivers caught drink driving?

The changing shape of road safety campaigning. Julie Townsend, Deputy Chief Executive, BRAKE

- Driver distraction estimated to be a factor in 22% of crashes. However, no concrete evidence currently available
- Hands held and hands free mobile use has similar level of risk (I think this is outdated and only applies to verbal conversations — surely texting, emailing and web browsing on a hand held phone is more dangerous than hands free talking?)
- Brake’s Driver Distraction campaign messages – put your phone in the boot (I personally find this unrealistic – many people will not be prepared to go lengths of time without contact in this “always on” era. People also wanted to be contactable in case of emergencies. Better to seek a technological solution that a blanket “no use” policy – that’s my view anyway)
- Brake’s Driver Distraction campaign messages – do not speak to someone who is driving (again, this is unrealistic, naïve and unlikely to have much penetration – also, speaking calmly with a passenger can combat fatigue/boredom?)
- Brake’s Driver Distraction campaign messages – Want tougher penalties and enforcement, ban on hands free and in vehicle tech (hmm)
- Brake’s Drink Driving campaign messages – Never drive after drinking, don’t drive early the next day. Zero tolerance BAC limit
- Brake’s goal is to make any alcohol consumption and driving socially unacceptable
Successfully Improving Road Safety Across Local Authorities, Simon D’Vali, Principal Engineer, Traffic and Highways, City of Bradford Metropolitan District Council

- We need better problem identification: high level of injuries are underreported (e.g. cycle vs vehicle collisions – need to access A&E hospital data)
- High profile cycle deaths may have resulted in an over funding of cycle safety? Knee jerk responses have occurred something to watch out for?
- Targets are needed. They have a proven record of success
- Start from premise that all KSIs on the network are preventable
- Think beyond road safety when seeking funding (e.g. other public health benefits of a road safety initiative like more foot traffic, greater physical activity)

The Future of Road Safety – The Liverpool City Region Approach, Cllr. Liam Robinson, Chair, Merseytravel

- Adult Pedestrians project: issue - drunk people walking in front of vehicles. Promotion of public transport, better LED street lighting
- Senior Road Users project: transferring older people to public transport reduces risk (have to be careful not to reduce their mobility through sure?) Pilot scheme with GPs/pharmacists around medication and driving safety; provide medication and driving warnings with repeat prescriptions
- "The 20 effect". Increased rolling out of 20mph residential zones. Prevention over cure. Target 20mph zones at areas with highest KSIs. Aiming for 20mph in all residential roads by Dec 2015 (74% of road network)
- "The 20 effect". Evidence is that most people comply to some extent (even if they don’t reduce their speed as low as 20mph). Has very high public support (90% in resident surveys, public forums, using young people injured by speeding vehicles as spokespeople)

Overall key points/themes

These comments have been made in the above presentation summaries. However, I have included them here for ease of reference

Road safety funding and prioritisation is very susceptible to austerity measures. It must compete with other public health concerns (e.g. obesity, pollution, suicide, mental illness, child abuse), sustainable transport and economic growth initiatives for an ever smaller pot of funding

The UK’s “excellent safety record” is not as good as it seems: For example the UK has:

- More than twice the pedestrian deaths of the best performing countries despite its citizens walking less
- The 4th best cycle death rate but this is still poor when you consider how little people cycle in UK compared to other EU nations
The UK’s roads are among the safest in Europe per million only because its risk to motor vehicles is low enough to offset a pedestrian death rate that is double Europe’s best

We can’t wrap ourselves in cotton wool as this damages quality of life. There are trade-offs that need to occur “Safety is for living – living is more than just keeping safe”

Rather than solely punishing infringing motorists there has been a shift in the UK to warning and intervening. For example, Police identify and patrol hotspots where road rage is likely to occur. They then seek participant’s views and mediate an agreed resolution without formal sanctions. Also, warning letters are being sent by the Highways Agency to drivers who use hard shoulder as an exit lane. This has led to significant drops in reoffending without the need for prosecutions or formal sanctions

Increase in “dutch style” cycle lanes in the UK. Aiming for a 300% increase in cycling by 2025

Real people are dying behind the statistics. Important to never lose sight of this

The current UK Government does not agree with setting road safety targets. Prefers “indicators” instead

UK Government strategy is to target serious offenders and help others to be safe (e.g. not approving .05 BAC as they believe it doesn’t tackle the serious offenders?)

High profile cycle deaths may have resulted in an over funding of cycle safety? Knee jerk reactions have occurred. Interesting observation?

I personally found Brake’s driver distraction campaign messages and “solutions” a little naïve, simplistic, unrealistic and overly focused on punishment

It’s important to help developing countries avoid going through the road trauma western nations have endured.

According to Professor Richard Allsop, Sweden’s Vision Zero is based on the misconception that no trade-off between life and limb and the benefits of road transport can be acceptable. A trade off will continue to occur

The increasing focus on promoting “active travel” may (initially) increase the number of people killed or seriously injured

The quality and attractiveness of public spaces is important. Safety engineering measures can be ugly and obstructive

“The more we succeed in bringing down this ratio, the harder people will expect us to look at the cost and intrusiveness of further reducing death and injury on our roads compared with the cost of reductions elsewhere” - Quote from Professor Allsop’s presentation

Highways England will focus on improving compliance rather than increase enforcement (e.g. sending warning letters to “lane hoggers” hard shoulder abusers, cell phone violators etc).
Most drivers who break the rules should be helped and not punished. It's a failure of "initial socialisation or training.

Estimated that: around ⅔ of UK drivers are speed limit compliant; 1/3 are remedial and can be "treated"; 1/6 are dangerous and need to be slapped and punished!

How can we make use of the conference material and the key presenters?

Get information on the remedial course documents.

Promote the benefits of the remedial courses on behaviour change to key NZ decision makers.

Further build a relationship with the conference keynote speakers. This will enable us to expand our up to date knowledge and evidence base.

Contact the presenters, where necessary, to seek further information on any of the points contained in this summary.

Consider sending a (revised) summary of the conference to our key agency contacts.

Include my attendance and a conference summary in Moturatai District Council Circular?
This update is confirming the venue for November's meeting.

NB: Agenda and papers to follow (via Shannon Van Lier).
Those are two good items, thanks Mike.

We could also discuss various speed management issues (110km/h, signage of fixed cameras) etc but that may be for another forum?

Colleagues

We are meeting on Thursday 26 May at 10.00 a.m. I have a meeting in Auckland starting at 1.00 p.m. so I will take part in the meeting via a video link.

The purpose of this email is to seek your ideas for agenda items. Everyone has been very focussed over the last six months shaping and delivering the new Action Plan. A very big thanks to you and your staff for getting this achieved.

At our last meeting Ernst got us to reflect on 2015, how we move forward as a group and what our focus should be (the current terms of reference dates back to 2007). We came up with some reflections but I suspect there is more room left for discussion. So I'd like to suggest we have that matter as one of the items.

The other key item is how our teams (separately and jointly) will give effect to the Plan. For each of the four actions, there are specific actions and enabler actions. It would be good if relevant lead agencies could give a heads-up for the ones they have responsibility for. I envisage that in the main, most lead agencies will be in the very early stages of giving effect to the actions.

So if you have other agenda items you want us to focus on, can you send them to me by next Thursday please.

Thanks and have a good weekend.

Mike

Mike James
General Manager - Road and Rail
Ministry of Transport – Te Manatu Waka

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Subject: National Road Safety Management Group. Kauri room Auckland
Location: Te Waka Boardroom - Level 6/SAS Tower

Start: Thu 26/05/2016 10:00 AM
End: Thu 26/05/2016 12:00 PM

Recurrence: (none)
Meeting Status: Meeting organizer

Organizer: Mike James
Required Attendees: Mike James; 'Ernst Zollner'; Dave Trappiit; Lisa Rossiter; Stephen Greally; Phil Parkes; 'Joern Scherzer'; 'Delaney Myers'; Leo Mortimer; Brent Johnston; Anita Balakrishnan;

Optional Attendees: 
Resources: Te Waka Boardroom - Level 6/SAS Tower
Hi Mike
That sounds like a good way forward. Rachel Prince in my team has the details of previous license agreements so Greg it is worth liaising with Rachel who I have cc into this email. We are happy to provide what is needed for a meeting to be held and to move this forward.

Regards

Jennie Gianotti
Manager Network User Behaviour

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Cool – so in terms of going forward would you like Post to seek a meeting with the MOI in KSA to follow up -- if so that I would suggest we put you (Jennie) directly in touch with Greg (DHOM in KSA) so you can give him a couple of notes to then let him seek the meeting.

Copying Greg in just to enable action on this.

Cheers

MOD
Hi Mike, Ben and Nick

I am following up on an email that Mike has sent to Craig in our organisation regarding our Mistakes Advertisement being used in Saudi Arabia.

The Transport Agency is keen that recognition of the use of our Intellectual Property for the Mistakes Advertisement by way of an agreement with a nominal fee occurs from Saudi Arabia. This is consistent to our approach with other countries who have used our advertisement and paid for it by signing a licensing agreement.

We believe in approaching it in this way it sets the right platform for any potential future engagement and support in road safety in Saudi Arabia. Additionally it sets the right platform for future business relationships and expectations.

It is worth noting that our Advertising Agency was approached by Saudi Arabia to pitch for road safety advertising in 2014 but the Agency declined.

We are appreciative of your support in pursuing this matter on our behalf.

Regards

Jennie Gianotti
Manager Network User Behaviour

Please consider the environment before printing this email

From: Mike O'Donnell -WLG
Sent: Thursday, 18 June 2015 3:37 p.m.
To: Craig Soutar
Subject: FW: Saudi Arabian copy of NZTA road safety advert [IN-CONFIDENCE]

Hey Craig

Can we discuss this tomorrow as well please – but there’s also an opportunity to turn it into a business development opportunity.

Look forward to catching up

MOD

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Begin forwarded message:

From: "BARNARD, Adriaan (MEA)"
Date: 11 June 2015 1:07:10 pm GMT+4
To: "Olga Speranskaia -WLG"
Cc: "HORNE, Stuart (MEA)"
Subect: FW: Saudi Arabian copy of NZTA road safety advert [IN-CONFIDENCE]

[SEEMAIL] [IN CONFIDENCE]

withheld under section 9(2)(a) of the Official Information Act 1982

Hi Olga

Hope you are well.

There’s been some chatter between MFAT/NZTA about the Saudi Ministry of Interior using – without licencing permission – an NZTA road safety advertisement. Post has suggested that this be used as an opportunity to have a discussion with the Saudis about what NZ might be able to offer by way of road safety IP/resources. I recall that NZ Inc was trying to get something similar concluded with the UAE.

Do you think there is scope for progressing this with KSA?

If so, would the Govt Partnership Office have capacity to lead this? E.g. confirm that NZTA would be keen for this, pull together some initial thoughts on NZ’s offering?

Happy to discuss.

Cheers

Ardi

Ardi Barnard
Policy Officer – Middle East Peace Process, Saudi Arabia, Kuwait, Bahrain, Oman, and the GCC
Middle East and Africa Division
New Zealand Ministry of Foreign Affairs & Trade | Manatū Aorere

withheld under section 9(2)(a) of the Official Information Act 1982

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From: LEWIS, Greg (RIY)
Sent: Thursday, 11 June 2015 6:37 p.m.
To: BARNARD, Adriaan (MEA)
Cc: HORNE, Stuart (MEA); MacMASTER, Hamish (RIY)
Subject: FW: Saudi Arabian copy of NZTA road safety advert

[IN CONFIDENCE]

Hi Ardi

Just to confirm are you/ MEA keen for us to meet MOI to explore possible partnership opportunities with their road safety group (including commercial opportunities) outlined in my email below?). One issue we would need to be mindful of is the capacity of NZTA and what they might be able to offer.
If we do proceed and obtain a call, grateful if you could please follow up with NZTA regarding talking points and briefing.

Many thanks
Greg

Greg Lewis
Deputy Head of Mission
New Zealand Embassy Riyadh | Te Aka Aorere

From: HOLBOROW, Rupert (ECO)
Sent: Sunday, 31 May 2015 12:05 p.m.
To: LEWIS, Greg (RIY); BARNARD, Adriaan (MEA)
Cc: DOBBIE, Bill (ECO); SIMONS, Ben (ECO); MacMASTER, Hamish (RIY); WRIGHT, Emily (MEA); HAWKINS, Matthew (MEA); BATCHelor, Ross (RIY)
Subject: Re: Saudi Arabian copy of NZTA road safety advert [SEE Mail] [SEC=IN CONFIDENCE]

[IN CONFIDENCE]

MFAT Device Tag: IN CONFIDENCE

Would be good to see if we could convert this into a commercial opportunity. R

From: LEWIS, Greg (RIY)
Sent: Sunday, May 31, 2015 09:00 PM
To: BARNARD, Adriaan (MEA)
Cc: DOBBIE, Bill (ECO); HOLBOROW, Rupert (ECO); SIMONS, Ben (ECO); MacMASTER, Hamish (RIY); WRIGHT, Emily (MEA); HAWKINS, Matthew (MEA); BATCHelor, Ross (RIY)
Subject: Re: Saudi Arabian copy of NZTA road safety advert [SEE Mail]

[IN CONFIDENCE]

Hi Ardi
Thanks for your note. The original NZTA “mistakes” advert received a lot of social media attention here about six months ago. I had it sent to me twice (on what’s app) by Saudi contacts, so it was clearly something that resonated well with a Saudi audience.

As you may know, Saudi Arabia has the highest road accident death toll in the world (17 people die per day in road accidents— and these are only the deaths that occur at the scene of a crash. Those who die later at hospital are not included in the official road toll stats). As the below article notes, road related accidents are the principle cause of death for males aged 16-36 in the country.


Given the shocking statistics, we think anything that helps promote road safety and to get the Saudi road toll down should be encouraged.

Against that backdrop, and assuming there is appetite in Wellington, we think there might be merit in making a call on the Ministry of the Interior to explore cooperation in road safety. We could note

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Released under the Official Information Act
that they're already using one of our campaigns, and we can see if there is opportunity for them to purchase other road safety material.

Grateful your views.
Cheers
Greg

Greg Lewis
Deputy Head of Mission
New Zealand Embassy Riyadh | Te Aka Aorere

From: BARNARD, Adriaan (MEA)
Sent: Thursday, 28 May 2015 8:12 a.m.
To: LEWIS, Greg (RIY)
Cc: DOBBIE, Bill (ECO); HOLBOROW, Rupert (ECO); SIMONS, Ben (ECO); MacMASTER, Hamish (RIY); WRIGHT, Emily (MEA); HAWKINS, Matthew (MEA)
Subject: RE: Saudi Arabian copy of NZTA road safety advert [SEEMail]

IN CONFIDENCE

Hi Greg

Keen for your thoughts on this one. It seems KSA govt agencies have used a NZ road safety advertisement without approval from NZTA. I tried to get hold of Rachel at NZTA just before but could get hold of her.

I'm not sure what scope there is for following this up with the Saudis, but let us know what Post thinks.

Cheers
Ardi

From: SIMONS, Ben (ECO)
Sent: Tuesday, 26 May 2015 9:32 a.m.
To: BARNARD, Adriaan (MEA)
Cc: DOBBIE, Bill (ECO); HOLBOROW, Rupert (ECO)
Subject: FW: Saudi Arabian copy of NZTA road safety advert [SEEMail]

UNCLASSIFIED

Hi Ardi,

Nick Brown in the Ministry of Transport has contacted us about Saudi Arabia copying an NZTA road safety advertisement (please see first email below). One News is likely to do a story about it, mentioning the PM's recent visit there.
Nick's follow-up email below notes that the advertisement was done or at least endorsed by the Saudi Ministry of the Interior. NZTA is keen to contact them to express their concerns, and Nick has recommended that this should be done through MFAT.

Would you (or someone in MEA) be able to contact Rachel Prince in NZTA to discuss? Her details are in the email below.

Thanks,

Ben

From: HOLBOROW, Rupert (ECO)
Sent: Wednesday, 20 May 2015 7:23 p.m.
To: [Redacted]; SIMONS, Ben (ECO); DOBBIE, Bill (ECO)
Subject: Re: Saudi Arabian copy of NZTA road safety advert [SEEMail]

[UNCLASSIFIED]

MFAT Device Tag:UNCLASSIFIED

Nick - currently in Singapore. Ben can you pass to MEA for advice/comment.

From: Nick Brown [Redacted]
Sent: Wednesday, May 20, 2015 12:50 PM
To: HOLBOROW, Rupert (ECO)
Subject: RE: Saudi Arabian copy of NZTA road safety advert [SEEMail]

Rupert

Further on this issueâ€¦

It appears that the copying of NZTA safety advertising material was done or at least endorsed by the Saudi Ministry of the Interior (please see email extract below), so the NZTA is keen to contact them to express their concerns.

I have advised NZTA that any contact with the Saudi Government should be through MFAT (so that any communication can be made in the right way and kept proportionate) â€” or at least that you would provide advice.

I am sure you will pass this onto your regional team or country post to deal with, but could I ask that the relevant MFAT person contacts Rachel Prince from the NZTA to discuss (details as below). I am not aware whether the One News story on this has aired yet â€” Rachel will be able to confirm.

Thanks

Nick

Nick Brown
General Manager Aviation and Maritime
Ministry of Transport â€” Te ManatÅ« Waka

[Redacted] | www.transport.govt.nz

From: Rachel Prince [Redacted]
Sent: Wednesday, 20 May 2015 3:22 p.m.
To: Lesley Reidy  
Subject: RE: MEDIA QUERY RE ADVERTISING

Hi Lesley

It turns out that it does involve government:

The three companies that identify themselves by having their logos on the end frame are (from left to right):

Eastern Provinces Road Safety Council  

General Dept. of Transport â€“ Ministry of Interior  
https://www.moi.gov.sa/wps/portal/traffic/lut/p/b0/04_SI9CPYkssy0xPLMnMzwMAfGizOJNnQCP8S18jQ3dnU2cDTxNDMMDgp1NjY2DTP sudU_P0C7/dFQF6cNQm/

Saudi Aramco â€“ large energy and chemical company  

Do you happen to know who I should contact at MFAT with our concerns?

Thanks kindly  
Rachel

Rachel Prince / Principal Advisor  
Network User Behaviour  
Access and Use Group

Email: [REDACTED]  
withheld under section 9(2)(a) of the Official Information Act 1982

From: HOLBOROW, Rupert (ECO)  
Sent: 11 May 2015 15:52  
To: Nick Brown; WALKER, David (DS TEG)  
Cc: Lesley Reidy  
Subject: RE: Saudi Arabian copy of NZTA road safety advert [SEEMAIL]

[SEEMAIL] [IN CONFIDENCE]

Nick â€“ helpful. Appreciate the heads up.

Rup.

Rupert Holborow  
Division Manager  
Economic Division  
New Zealand Ministry of Foreign Affairs & Trade | ManatÅ« Aorere

[REDACTED]  
www.nzunsc.govt.nz  
withheld under section 9(2)(a) of the Official Information Act 1982
From: Nick Brown
Sent: Monday, 11 May 2015 2:38 p.m.
To: WALKER, David (DS TEG); HOLBOROW, Rupert (ECO)
Cc: Lesley Reidy
Subject: Saudi Arabian copy of NZTA road safety advert [SEEMail]

David, Rupert

This is to let you know that your communications team will receive a heads up from the NZ Transport Agency that they've become aware of a Saudi Arabia copy of one of their road safety ads "Mistakes": [link to website]

The copy can be viewed here: [link to video]

The Transport Agency wanted to let you know, as ONE News are likely to do a story, and taking into account the Prime Minister’s recent visit to Saudi Arabia.

The Transport Agency thinks the story will be a good one - imitation being the sincerest form of flattery. Their line will be to explain that some countries/organisations have paid for the concept and/or the ad itself, but others have copied it and more still have pulled it off YouTube and placed their own subtitles and voiceovers to it.

The Transport Agency is working to decipher the logos from this copy so they can contact the appropriate parties to express disappointment that they did not contact them before using the concept.

We will alert our Minister’s office, but I wanted to ensure you were also aware of the above. Could I suggest if you want more information, or wish to discuss how NZTA makes any approach to Saudi Arabia, you contact them direct (and copy us in if appropriate).

Thanks

Nick

Nick Brown
General Manager Aviation and Maritime
Ministry of Transport "Te Manatārā Ariki Waka"

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Sent from my iPhone

Ben Peacey
Senior Advisor
New Zealand Transport Agency

Begin forwarded message:

From: "Vicky Waddon"<vicky@nzta.gov.nz>
To: "Ben Peacey"
Cc: "Official Correspondence"; "Robyn Fisher"
Subject: BRI-0497 road safety & visiting drivers

Hi Mark

Attached briefing as requested.

Thanks

Vicky Waddon / Senior Adviser
Official Correspondence Unit
National Office / Victoria Arcade, 50 Victoria Street,
Private Bag 6995, Wellington 6141, New Zealand

Find the latest transport news, information, and advice on our website:

www.nzta.gov.nz

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MINISTERIAL BRIEFING NOTE

Subject: Road safety - visiting drivers
Date: 27 February 2015
OCU number: BRI-0497
Priority: Immediate

Contact for telephone discussion (if required)
Name: Geoff Dangerfield
Position: Chief Executive
Name: Ben Peacey
Position: Senior Advisor Safety Directions

Action taken by Office of Associate Minister of Transport
☐ Noted
☐ Approved
☐ Seen by Minister
☐ Referred to
☐ Needs change
☐ Withdrawn
☐ Overtaken by events

withheld under section 9(2)(a) of the Official Information Act 1982
27 February 2015

Associate Minister of Transport

Road safety - visiting drivers

Purpose

1. You have asked for a briefing about visiting drivers and specifically what initiatives are currently underway, what initiatives have been recently implemented or will be delivered in 2015, and what initiatives are planned for beyond 2016.

2. Attachment one is a summary of key information and actions is presented in an A3 snapshot.

Visiting drivers

3. The number of tourists to New Zealand is increasing. In 2014, approximately 2.86 million visitors came to New Zealand. This is an increase of 5.1% from 2013. The number of visitors from emerging tourism markets such as China, India, Singapore, Malaysia and Hong Kong has increased significantly. This is reflective of the success of the government’s tourism campaigns in these markets.

4. More visitors are choosing to drive themselves. Self-drive holidays have been encouraged because self-driving visitors spend more per day. Unfortunately, as more visitors choose to self-drive, more visitors are involved in fatal and serious injury crashes.

5. All road users make mistakes. The consequences of mistakes are the same regardless of the driver’s country of origin. The table below shows the number of crashes in 2013 involving a driver who held an overseas licence. Note that primary responsibility does not equate to legal liability.

Crashes in 2013 involving a driver with an overseas licence

<table>
<thead>
<tr>
<th>Crash severity</th>
<th>No of crashes involving overseas drivers</th>
<th>Number of crashes where overseas driver had primary responsibility</th>
<th>Number of crashes where overseas driver did not adjust to local conditions</th>
<th>Total number of all crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>1 (4.6%)</td>
<td>1 (4.6%)</td>
<td>7 (2.9%)</td>
<td>239</td>
</tr>
<tr>
<td>Serious Injury</td>
<td>90 (5.5%)</td>
<td>78 (4.7%)</td>
<td>37 (2.2%)</td>
<td>1,649</td>
</tr>
<tr>
<td>Minor Injury</td>
<td>448 (6%)</td>
<td>328 (4.4%)</td>
<td>101 (1.4%)</td>
<td>7,447</td>
</tr>
<tr>
<td>Total</td>
<td>549 (5.8%)</td>
<td>417 (4.5%)</td>
<td>145 (1.6%)</td>
<td>9,335</td>
</tr>
</tbody>
</table>

6. Visiting drivers from countries where they drive on the left hand side of the road (i.e. Australia and United Kingdom) tend to be involved in ‘run-off road’ type crashes on corners (i.e. the driver failed to take the corner correctly). Visiting drivers who drive on the right hand side of
the road (i.e. America and China) tend to be involved in 'head-on' crashes on corners (i.e. the driver crossed the centre line on a corner and crashed into another vehicle).

7. While the full set of Crash Analysis (CAS) data for 2014 is not yet available, preliminary analysis suggests that overseas licence holders involved in crashes are (in order): Australia, China, Germany, United Kingdom and India. This is generally reflective of the number of visitors coming to New Zealand from these countries, with the exception of India.

8. See briefing (Min-1224 – Visiting drivers – crash data analysis) for additional CAS analysis and information.

National road safety programme

9. Through the National Land Transport Programme (NLTP) the Transport Agency spends approximately $50m per annum on dedicated safety improvement projects. The work delivered ranges from major intersection improvements such as roundabouts and improving high risk intersections to the installation of guard rails and rumble strips.

10. All State highway and local road improvement programmes, along with all maintenance and renewal programmes in the NLTP have significant safety improvements included. A further $300m per annum delivers the road policing programme and $30m per annum delivers road safety promotion that supports all other road safety initiatives.

11. All road safety investment and programmes included in the NLTP contribute to improving road safety for all road users, including visiting drivers.

12. During 2014/15 approximately $23 million of safety improvements in the Otago/Southland region will have been implemented.

The visiting drivers signature project

13. The Visiting Drivers Signature project is investigating and delivering road safety initiatives above and beyond the current safety initiatives already undertaken by the Transport Agency and local councils through the NLTP.

14. The purpose of the project is to work in partnership with local councils, the tourism sector and stakeholders such as the Automobile Association to try new initiatives to assist visiting drivers that if successful can be replicated nationwide or in other parts of New Zealand. By taking a Safe System and partnership approach we are able to co-ordinate actions across the tourism and transport sectors.

15. The partners involved in the Visiting Drivers Signature project include NZ Transport Agency, NZ Police, Queenstown Lakes and Southland District Councils, Tourism NZ, Rental Vehicle and Tourism Industry Associations, and Ministry of Transport. The Ministry of Business, Innovation and Employment (MBIE) is likely to seek involvement in the project and offer its insights. The project partners are involved at both the governance and technical level.

Crash analysis

16. Crash analysis from the Crash Analysis System (CAS) has been completed for the Otago/Southland region.

17. A recent ministerial memo (Min-1224) outlines the key statistics nationally and within the Otago/Southland area relevant to visiting drivers.

18. As part of the Visiting Drivers Signature Project in-depth crash analysis of crashes in Otago/Southland involving an overseas licenced driver is being undertaken. The purpose of this analysis is to better understand the causes of the crash and fatalities/injuries.
19. This analysis will assist the Transport Agency implement the right road and roadside safety improvements to help prevent future crashes. The analysis will also be relevant to the Tourism sector and help visitors to make safe choices when planning their trip to New Zealand.

20. The in-depth analysis is expected to be completed by April 2015.

Safety initiatives being delivered now and planned

21. Road safety actions aimed at all road users and specifically to visiting drivers are underway.

22. The actions are based on increasing awareness, driving at a safe speed, using safe vehicles, and driving on safe roads and roadsides. The actions are being delivered by the Transport Agency, local government, NZ Police and tourism partners.

23. Other planned road and roadside improvements include increasing direction arrows (from 5km to 2.5 km spacing on average) on key tourist routes, safe layby areas for resting and taking photos, further rumble strips and 'no passing' lines, and median treatments and side barriers where necessary. These improvements and others based on the in-depth crash analysis are being considered as part of the 2015-18 National Land Transport Programme.

Journey travel times

24. A very small number of popular tourists routes identified on online mapping tools have estimated travel times that are not considered to encourage safe driving. These routes tend to be where cell phone coverage is poor, for example State Highway 94 from Te Anau to Milford Sound.

25. Where cell phone coverage is poor or non-existent, electronic mapping providers are not able to collect real time information about the time a journey takes and are therefore unable to update the average time taken. Where this is the case, the mapping providers use a default algorithm based on the default speed limit, which is usually 100km/hr for open roads. The default algorithm is used globally.

26. To help visitors plan a safe journey time, the Tourism Industry and Rental Vehicle Associations are strongly encouraging the use of the Transport Agency and AA’s travel time calculators. The Transport Agency is also looking to use variable messaging signs that state the estimated journey time to key destinations.

27. The Transport Agency and AA have been working with Google Maps to improve the estimated travel time for the journey from Queenstown to Milford Sound. As a result, Google Maps has increased the estimated travel time for this journey, and are identifying other potential journeys where the travel time could be inaccurate and potentially unsafe due to poor or no cell phone coverage.

Using technology

28. The Transport Agency is aware of a number of cell phone apps that are available and contain road safety information, for example the free Campermate app. Since starting the Visiting Drivers signature project, the project team have had a number of approaches from individuals and companies that are looking to develop an app to help visitors when driving in New Zealand.

29. Apps could be useful for assisting visiting drivers, however, there are a number of issues that need to be considered including:

   a. It is illegal to use a cell phone or tablet when driving. This can be overcome with phone cradles or the passenger using the device and informing the driver

   b. Visitors need to regularly use the app for it to be useful
c. New Zealand has, by international standards, expensive roaming and data charges

d. Some parts of New Zealand have poor or non-existent data and cell phone coverage, in part due to the mountainous terrain.

30. Apps certainly have a place as part of the solution. The Transport Agency will continue to work with app developers when approached to help ensure road safety messaging included as part of the app is relevant and accurate.

Summary

31. Road safety actions to improve road safety for visiting drivers are underway. Some of these actions were already in place and others have started as a result of the recent focus on visiting drivers and the signature project. Additional improvements to be in place by 30 June 2015 include variable messaging signs about journey times in key places, additional ‘no passing’ lines, and rumble strips on the median and road sides.

32. We recognise there is much more to be done, especially in terms of the interaction with individual drivers before they start their journeys in New Zealand. The work with the car and campervan rental industry and their linkages to the tourism ‘supply chain’ is critical in this regard.

Recommendation

33. It is recommended that you note the contents of this briefing.

Geoff Dangerfield
Chief Executive

Hon Craig Foss, Associate Minister of Transport
Noted/Approved/Declined
Date ....... /........./......
ATTACHMENT ONE: ROAD SAFETY - VISITING DRIVERS

THE ISSUE
The number of tourists to New Zealand is increasing. In 2014, approximately 2.86 million visitors came to New Zealand. This is an increase of 5.1% from 2013. The number of visitors from emerging tourism markets such as China, India, Singapore, Malaysia and Hong Kong has increased significantly. This is reflective of the success of the government's tourism campaigns in these markets.

More visitors are choosing to drive themselves. Self-drive holidays have been encouraged because self-driving visitors spend more per day. Unfortunately, as more visitors choose to self-drive, more visitors are involved in fatal and serious injury crashes.

All road users make mistakes. The consequences when overseas drivers make mistakes are similar to the consequences of mistakes made by New Zealand drivers. The table below shows the number of crashes in 2013 involving a driver who held an overseas licence. Note that primary responsibility does not equate to legal liability.

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Visiting drivers who drive on the left hand side (i.e. Australia and United Kingdom) tend to be involved in "run-off road" type crashes on corners i.e. the driver failed to take the corner correctly. Visiting drivers who drive on the right hand side (i.e. America and China) tend to be involved in "head-on" type crashes on corners i.e. the driver crossed the centre line on a corner and crashed into another vehicle.

While the full set of CAS data for 2014 is not yet available, preliminary analysis suggests that the overseas licence holders involved in crashes is (in order): Australia, China, Germany, United Kingdom and India. This is generally reflective of the number of visitors coming to New Zealand from these countries, with the exception of India.

See briefing (Min-1224 – Visiting drivers – crash data analysis) for additional CAS analysis and information.

ROAD SAFETY INITIATIVES THROUGHOUT NZ
Through the National Land Transport Programme (NLTP) the Transport Agency spends approximately $50m per annum on dedicated safety improvement projects. The work delivered ranges from major intersection improvements such as roundabouts and improving high risk intersections to the installation of guard rails and rumble strips. During 2014/15 approximately $2 million of safety improvements in the Otago/Southland region have been implemented.

All State highway and local road improvement programmes, along with all maintenance and renewal programmes in the NLTP have significant safety improvements or components included. A further $300m per annum delivers the road policing programme and $30m per annum delivers road safety promotion that supports all other road safety initiatives.

All road safety investment and programmes included in the NLTP contribute to improving road safety for all road users, including visiting drivers.

THE VISITING DRIVERS SIGNATURE PROJECT
The Visiting Drivers Signature project is investigating and delivering road safety initiatives above and beyond the current safety initiatives already undertaken by the Transport Agency and local councils through the NLTP.

The purpose of the project is to work in partnership with local councils, the tourism sector and stakeholders such as the Automobile Association to try new initiatives that if successful can be replicated nationwide or in other parts of New Zealand.

By taking a Safe System and partnership approach we are able to co-ordinate actions across the tourism and transport sectors.

The partners involved in the Visiting Drivers Signature project include NZ Transport Agency, NZ Police, Queenstwon Lakes and Southland Districts Councils, Tourism NZ, Rental Vehicle and Tourism Industry Associations, and Ministry of Transport.

The Ministry of Business, Innovation and Employment (MBIE) is likely to seek involvement in the project and offer its insights. The project partners are involved at both the governance and technical level.

KEY MESSAGES
- Every death and serious injury on our roads is a tragedy, and nearly all are avoidable.
- The Government is committed to reducing crashes and improving safety for everyone who uses our roads - New Zealanders and visitors to our country.
- To prevent these tragedies we need to improve safety in every part of the system - vehicles, speeds, road users and the roads themselves.
- The effort being put into making our roads safer is huge. It includes targeted road policing, safety improvements for state highways and local roads, and other initiatives representing an annual safety investment of about $400m. This funding is not recorded in any ledger as being earmarked for 'tourist road safety', but the investment is significant and the benefits for all road users - New Zealanders and visitors - are real.
- The initiatives in the Visiting Drivers Signature project sit over and above our ongoing national safety programme.

More needs to be done and more will be done. We will continue to work with the tourism industry to develop better ways of providing information about New Zealand driving conditions to visitors. We will provide better signage and increase Police patrols on key tourist routes. We will increase the use of rumble strips, directional arrows, median lines and barriers. We will encourage rental operators to purchase vehicles with life-saving technology like electronic stability control. And we will continue to look for new ideas and new innovations with the potential to make our roads safer.

By the numbers
- 2.9 million - number of visitors to New Zealand in 2014 - an increase of 5% from 2013.
- 11 - number of fatal crashes involving overseas drivers in 2013.
- 239 - total number of fatal crashes in 2013.
- $400 million - approximate annual spend on dedicated safety improvements and road policing.
- 132 - kilometres of rumble strips laid on Otago/Southland highways.
<table>
<thead>
<tr>
<th>Previous Actions Completed</th>
<th>Completed Actions in and Planned for 2014/15</th>
<th>Planned Actions for 2015/15 Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safe use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- &quot;What's different about driving in New Zealand&quot; pamphlet available for all rental operators and others who want to use it. Information is also available online in multiple languages.</td>
<td>- Promotion of key safety messages: - Steering wheels tags - trialled in August, 160,000 printed in December 2014 by industry partners; second print run being planned - Bus back advertising on Queenstown's local buses - Included in accommodation guides and weekly information to accommodation providers. Published in all 2014/15 AA Traveler guides.</td>
<td>- Work with Tourism NZ to develop in-flight safety video for all incoming flights to New Zealand</td>
</tr>
<tr>
<td>- Self-driving instructions which are published in Tourism NZ visitor guides</td>
<td>- Key route information for winter and now summer (journey time, hazards) available to tourists via accommodation providers, i-sites and tourist information sites. Initiated by Queenstown Lakes and Southland District Councils.</td>
<td>- Work with Tourism NZ to include road safety in tourism promotional material</td>
</tr>
<tr>
<td>- General road safety advertising at national and local level</td>
<td>- Best practice guideline developed by the industry associations for: - rental vehicle operators, including how to access driving experience and access and use online driving tests - accommodation providers - All guides promote accurate journey estimates - Nationwide workshops for accommodation providers and rental vehicle operators. Information in guides and practical steps to help keep visitors safer when driving.</td>
<td>- Work with Tourism Sector (Tourism NZ, Tourism Industry Association, Tourism Export Council etc.) to provide relevant road safety messaging to wholesale travel agents and key suppliers</td>
</tr>
<tr>
<td>- Keep left stickers made available at no cost to all rental vehicle operators</td>
<td>- Drivsafe website developed for online practical advice about driving in New Zealand, in multiple languages with more translations expected.</td>
<td>- Increase Police patrols/visibility on key high volume tourist routes</td>
</tr>
<tr>
<td>- Information kits at Queenstown International Airport</td>
<td>- Increased Police visibility on key tourist routes</td>
<td>- Use variable signage to inform drivers of estimated journey times</td>
</tr>
<tr>
<td>- Rental vehicle operators informing info on their websites, assessing customers’ readiness to drive at pick up, showing videos and providing audio commentary while driving.</td>
<td>- Increased Police patrols targeting speeding on key tourist routes.</td>
<td></td>
</tr>
<tr>
<td><strong>Safe speeds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Advice to drivers provided to tell them that the maximum open road speed in New Zealand is 100 km/h.</td>
<td>- Highly visible messaging to remind high-speed motorists that anything over the speed limit is speeding.</td>
<td>- Review of speed limits on State Highway in Otango/Southland area. This part of an national initiative for safer speeds</td>
</tr>
<tr>
<td>- Changed some speed limits to better manage risks at intersections and on high risk sections e.g. the Otago Peninsula project (not specifically targeted at visiting drivers)</td>
<td>- Improved accuracy of Google Maps real time for the Queenstown to Milford Sound journey</td>
<td>- Increased Police patrols on southern tourist routes</td>
</tr>
<tr>
<td><strong>Safe roads and roadsides</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Directional arrows have been marked at access ways, rest stops, intersections on approximately 180km of Otago/Southland low volume State highways</td>
<td>- Increased curve warning signage on State Highways in Southland (cost $230,000)</td>
<td>- Development of the business case which will identify whether there is good value from investing in this problem. This will consider all aspects including reputational risk as tourist destination and road safety.</td>
</tr>
<tr>
<td>- Rumble strips have been laid over approximately 282 linear km of SH1 in Otago/Southland</td>
<td>- Local councils including road signage on visitor routes (e.g. the Catlins, Mount Aspiring, Fiordland and the Crown Range).</td>
<td>- Safety treatments on roads and roadsides will be deliver in 2015/16:</td>
</tr>
<tr>
<td>- Improved and increased curve signs where crashes have taken place and on at-risk out of context curves.</td>
<td>- Boarm of no passing line marked on highways to address vertical curve risk</td>
<td>- Increasing direction arrows by reducing the spacing from 5km to 2.5 km on average.</td>
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<td>- Development of risk based treatment strategies for the network, based on KiWAP risk and star rating</td>
<td>- Vegetation removal for visibility across Southland network on curves and intersections</td>
<td>- At least 60km of ‘no passing’ lines on state highways to address vertical curves.</td>
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<tr>
<td>- Previous safety improvement programmes of approximately $2.3 million per annum across Otago/Southland highway network</td>
<td>- An additional 1km of safety barrier installed</td>
<td>- Five Rivers intersection improvement.</td>
</tr>
<tr>
<td><strong>Safe vehicles</strong></td>
<td></td>
<td></td>
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<tr>
<td>- National vehicle safety initiatives including Fleet Safe and the Right Car Website</td>
<td>- Roadside driver feedback signs installed</td>
<td>- Improvements to rest areas and lookout signage.</td>
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<td>- Mandatory Electronic Stability Control in new vehicles from 2015</td>
<td>- In-depth analysis of crashes involving visiting drivers to enable best interventions to be delivered</td>
<td>- Proposed safety improvement programme for the next 18 months is approximately $2 million for Otago/Southland.</td>
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<tr>
<td>- Working with the Rental Vehicle Association to increase awareness of vehicle safety to rental operators i.e. the benefits of electronic stability control, automatic braking features etc.</td>
<td>- Investigate where additional median treatments and side barriers can be installed.</td>
<td></td>
</tr>
<tr>
<td>- Commercial vehicle and rental car inspections on key tourist routes</td>
<td>- TradeMe including safety rating on all vehicle listings</td>
<td>- Promote use of speed warning indicators in rental vehicles</td>
</tr>
<tr>
<td>- Safety ratings included on mandatory fuel efficiency rating labels</td>
<td></td>
<td>- Work with Tourism and Industry and Rental Vehicle Associations to encourage rental operators to purchase vehicles that have electronic stability control when replacing fleets before mandatory requirement</td>
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<tr>
<td></td>
<td></td>
<td>- Work with Tourism Sector to proactively encourage visitors to hire the safest vehicle they can afford.</td>
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</table>
Hi Shelley & team

Thank you very much for your time today. It's great to have an appreciation of the work that you're doing in this area & Siobhan & I look forward to on-going collaboration with you.

FYI I'm attaching e-versions of the documents I shared today along with the more detailed project initiation document.

Best regards
Margaret

Margaret Dugdale / Principal Advisor, Strategy Team
Strategy, Communications and Performance

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1. Develop Strategic Direction for Automated Compliance
   - Transport Agency lead (SCP)
   - Big picture, long-term whole of system approach in context of Intelligent Transport Systems
   - Using smart technology to manage risks other than speed and red lights e.g. VDAM, WoF/CoF, seatbelt wearing, vehicle emissions, cell phone use, lane restrictions, RUC etc
   - Review organisational roles and responsibilities - including other RCAs, legislative framework

2. Assess Police proposal for transfer of safety camera network to the Transport Agency
   - Police lead
   - Covers fixed and mobile speed cameras, redlight cameras and may extend to point to point speed cameras
   - Road Policing Programme context - implement through next GPS/NLTP if agreed
   - Police view that safety cameras are not a good fit with core responsibilities and capability
   - Financial pressure on Road Programme - processing costs from expanded camera network and need to re-develop infringement processing system
   - Regulatory change needed

3. Coordinate and resolve current RONS issues
   - Transport Agency lead (R&I/HNO)
   - Wellington Smart Motorway, Waterview Tunnel, possibly Waikato Expressway
   - Need for go-live solutions and work-arounds
   - Police constrained by current resources and focus on safety rather than efficiency
   - Regulatory amendment in progress to allow automated enforcement of variable speed limit signs
Opportunity to develop a new paradigm for automated compliance
Safer Journeys Action Plan 2016–2020: "Enabler Action" under the broad heading of "Enable Smart and Safe Choices": Develop an automated compliance strategy by the end of 2017 to take advantage of 21st century compliance technology.

Police have proposed transferring safety camera management and operations to the Transport Agency because of financial pressures, and because this function does not align with core Police functions and capability.

These are potential game changers – opportunity to rethink.

Automated Compliance: Overview for Developing Strategic Direction

Possible Vision for Automated Compliance 2025?
- Automated compliance operations are designed to complement and reinforce regulatory settings (speed, VDA13, VUC etc), network design, public education and (possibly) incentives to optimize voluntary compliance for both safety and efficiency benefits.
- Most "routine" compliance activity is automated and part of road infrastructure AND/OR or built into vehicle (either than being officer-led).
- The sequenced introduction of automated compliance to new functions is targeted to risk, with robust business cases and regular evaluation of effectiveness.
- Routine transport enforcement including commercial vehicle compliance is managed by the Transport Agency with delegation possible to other Road Controlling Authorities. Third party service provisions also possible.

Planning & Investment
- Decisions on direction for automated compliance need to be made in time for development of the next Government Policy Statement and National Land Transport Programme e.g. redefinition of Activity Classes.
- Each extension of automated compliance will need its own business case to be developed.

Legislative Issues
- Review organisational roles and powers for enforcement of transport regulations
- Review provisions relating to Road Policing Programme
- Develop overarching enabling framework with new types of compliance systems coming into force as regulatory conditions are met?
- How to regulate technology minimum standards?
- Privacy and data sharing issues need to be resolved - what is the legitimate expectation of privacy on the publicly funded network?
- Demerits available for automatically detected.

Customer Perspective/Engagement
- More diverse, ageing population - changing risk profiles, vehicle ownership and driver licensing trends
- Overcoming perception that automated compliance is about revenue gathering - being clear about the risks we are trying to manage and how automated compliance will promote safety and efficiency for all users.
- Making voluntary compliance easier and normal with regulatory sanctions as a last resort for "outliers".
- Compliance: commercial operators will experience minimal downtime from reduced officer-led compliance, and rogue operators will find evasion harder.
- Look to lessons learned from Changing the conversation on speed.
- Road users expect accurate and timely information about

Vehicle Developments
- Increasing autonomy - progressing to driverless vehicles; in vehicle technology could eventually prevent many types of non-compliance.
- Ever-increasing vehicle-to-vehicle and vehicle to network.

Wider Social-Political-Economic Trends
- Increasing metropolitan - regional divide.
- Competing demands on police resources - law & order anxiety, social unrest as inequality increases.
- Sustainability and managing environmental impacts of transport increasingly important.
- Government expects increasing use of technology to deliver transport outcomes, and most transactions to be completed online.

Intelligent Transport Systems
- Automated compliance is part of ITS and systems need to talk to each other in real time.
- How best to manage the interface between network management and compliance functionalities e.g. collecting information for network management decisions does not have to meet the evidential standard required for issuing an infringement notice, privacy implications etc.
- Technology is evolving rapidly - becoming smarter and cheaper.

Capacity Building
- Road Controlling Authorities, including the Transport Agency would need to build capacity to take on more compliance functions.
- Risk of inconsistency between RCAs.

Infringement Processing
- Current model for Police Infringement Bureau is unsustainable for Police – especially with planned increase to safety camera network.
- Options include transferring to the Transport Agency, Ministry of Justice or creating a new
Workstream Initiation Document

Automated Compliance: developing strategic direction and operating principles

V0.3: 9 May 2016
Document preparation

Name: Margaret Dugdale
Job title: Principal Advisor, Strategy
Email: [Redacted]
InfoHub [Redacted] withheld under section 9(2)(a) of the Official Information Act 1982
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<td>NZ Transport Agency Sponsor</td>
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<tr>
<td>Tommy Parker, Group Manager, Highways &amp; Network Operations</td>
<td>HNO input</td>
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<tr>
<td>Bob Alkema, National Manager Investment, Planning &amp; Investment</td>
<td>P&amp;I input, coordination with Road Policing Programme</td>
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<tr>
<td>Lisa Rossiter, National Manager Strategy</td>
<td>Workstream Manager</td>
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<tr>
<td>Margaret Dugdale, Principal Advisor, Strategy Team</td>
<td>Workstream lead</td>
</tr>
<tr>
<td>Siobhan Bakker, Advisor, Strategy Team</td>
<td>Research and advisory support</td>
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<tr>
<td>Steve Penman, Principal Advisor, Strategy Team</td>
<td>Liaison with ITS strategy development</td>
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<td>Bruce Richards, Road Safety Manager, Planning &amp; Investment</td>
<td>Coordination with current Highways and speed management work</td>
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<td>Hannah Hyde, Highways &amp; Network Operations</td>
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<td>ACC input</td>
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<td>Carey Griffiths, Programme Manager</td>
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<td>Dave Trappitt, Acting Assistant Commissioner, Road Policing and Prevention</td>
<td>Police input</td>
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<td>Superintendent Steve Greally, National Manager Road Policing</td>
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<td>Inspector Peter McKennie, Road Policing</td>
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<td>Inspector Jeff Penno</td>
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<td>Ministry of Transport</td>
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<td>Leo Mortimer</td>
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<td>Brent Johnston</td>
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1. BACKGROUND

1.1 Workstream Purpose

The Safer Journeys Action Plan 2016–2020 contains the following action:

Develop an automated compliance strategy by the end of 2017 to take advantage of 21st century compliance technology.

This document provides the terms of reference for the workstream to develop the strategic direction and operating principles for automated compliance.

1.2 Definition of automated compliance

Proposed working definition:

"Using technology to guide behaviours and manage risks as part of developing a safe and efficient land transport system" –

The most widely known application is speed cameras – initially enforcing speed limits at a particular point, but in future point to point cameras will also be used to monitor average speeds. Other means of detection besides cameras are within scope e.g. Radio Frequency Identification (RFID) or weigh-in-motion machines.

Police and Auckland Transport currently operate a few red-light cameras, using the same camera types as for speed compliance.

In some jurisdictions, automation extends to the issuing of infringement notices directly on receipt of information that an offence has occurred. In New Zealand Police manually check that standards for the issuing of a notice have been met before notices are issued.

Other transport risks that are or could be suitable for automated compliance systems are:

- Mass and dimension restrictions for freight vehicles
- Lane management
- Congestion management
- Overtaking
- Level crossings
- Warrant of Fitness/Certificate of Fitness compliance
- Vehicle licensing
- Road User Charges (RUC) compliance
- Tolls
2. WORKSTREAM DEFINITION

2.1 Problem statement

New Zealand does not have a strategy to advance and optimise the use of automated compliance systems to enhance the safety and efficiency of road transport.

The following points are noted from the relevant working paper prepared as part of the development of the 2016–2020 Safer Journeys Action Plan:

- New roads, particularly new sections of State Highway and motorways, are now being engineered in such a manner that Police cannot effectively enforce on them.
- There is a desire to increase speed limits to 110km/h on some sections of the network that have appropriate levels of engineering. The engineering features that make these sections of road safer also make enforcement extremely difficult.
- New fixed speed cameras are being rolled out; however these have limited effectiveness in a motorway environment, with risk-taking drivers slowing down just where the camera is located and otherwise travelling at high speeds.
- Point-to-point cameras are a logical solution for roads of this nature, as well as having an element of fairness for the public in how excess speed is determined. Further, it would be ideal to put the infrastructure in place to support point-to-point cameras as the new roads of national significance are being built.
- Motorcyclists continue to be over-represented in fatal crashes. Front plates on motorcycles, to enable speed camera enforcement, have not been progressed for practical reasons. However, technical solutions such as dual-facing cameras are available.
- Three dual-purpose digital red light/speed cameras are now operating. Road controlling authorities would like more of these cameras to address death and serious injury risks at intersections.
- Fifty tonne plus vehicles have been introduced to the network, posing increased risks to road safety and the network infrastructure, in addition to efficiency and economy risks if these vehicles crash as a result of non-compliance. Upgrading weigh-in-motion technology to the level required for Gazetting as an approved traffic surveillance device, and adding cameras for vehicle identification would promote increased compliance.
- Automated Number Plate Recognition (ANPR) can efficiently and effectively identify vehicles that are non-compliant with WoF, CoF and vehicle licensing, vehicles of high risk and disqualified drivers, stolen vehicles and vehicles of persons who are otherwise wanted for road safety and criminal offending. ANPR is being used by Police, but in a very limited manner in terms of what ANPR is now capable of when using more modern technology and linking into network camera systems.
• Technology is now available to enforce other road safety and network efficiency offences, such as incorrect lane use, unsafe lane changing and variable speed limits. There is no strategy in place to advance this.

• The Police Infringement Processing System (PIPS) was designed and developed at a time when much of the new automated enforcement technology was not available or envisaged to be in place in New Zealand. If new enforcement technology is to be introduced, PIPS will need to be upgraded or replaced. An example is that the dual purpose cameras are currently only operated in red light mode because PIPS is not capable of processing two offences from the same camera incident. Similar issues are likely with point-to-point cameras and weigh-in-motion enforcement.

• There is scope for re-thinking risk management and encouragement of compliance as a proactive, prevention-oriented approach rather than as a reactive, history-based and punitive approach, and using automation to optimise benefits.

• Many industries now use technology to manage a range of transport risks (e.g. on-vehicle systems linked to back office to monitor speed or working hours; weigh-in-motion at ports) – may be opportunities for joined-up approaches.

• Improvements in the accuracy of GPS may mean it becomes more useful for some compliance purposes.

2.2 Opportunity – increasing use of Intelligent Transport Systems

There is an opportunity to develop an automated compliance strategy concurrently with ongoing work on developing Intelligent Transport Systems (ITS). The need for an automated compliance strategy for New Zealand needs to be seen in the context of the increasing importance and uptake of ITS as the foundation for network management. Essentially automated compliance systems are a subset or particular application of ITS, so automated compliance strategy development and implementation need to be integrated with the overall development of ITS and broader network management in New Zealand.

3. OUTCOMES/BENEFITS SOUGHT

Increasing use of effective and efficient automated compliance systems will deliver:

• Reduced deaths and serious injuries – not just the traditional categories covered in the road toll but extending to those working on the land transport system and the wider public affected by the network.

• A compliance system that is well-accepted and trusted by stakeholders and system users

• Value for money (benefits significantly outweigh costs)

• Greater network efficiency
- More predictable journey times
- Integrated network management
- Reduced road/closures delays due to road crashes
- Reduced rates of offending and increased voluntary compliance through using technology to influence behaviour
- Better targeting of resources to risk and matching operations to organisational capabilities
- Improved environmental outcomes/sustainability
- A more level playing field for commercial operators that actively rewards responsible operators and discourages rogue operators
- Better asset management and protection
- A “future ready” network

4. STRATEGIC ALIGNMENT

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<tr>
<th>AREAS OF FOCUS</th>
<th>STRATEGIC INITIATIVES</th>
<th>HOW THIS PROJECT CONTRIBUTES TO ACHIEVING THE BUSINESS OR TRANSPORT SECTOR STRATEGY</th>
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<td>Government Policy Statement</td>
<td>Objective: A land transport system that is a safe system, increasingly free of death and serious injury</td>
<td>Greater use of automated compliance will contribute to reducing deaths and serious injuries</td>
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<td>Objective: A land transport system that delivers the right infrastructure and services to the right level at the best cost</td>
<td>Automated compliance can significantly reduce transaction costs per infringement detected, and enable better targeting of resources to risk</td>
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<td>NZ Transport Agency</td>
<td>Objective 4: Implement the Safe System approach to create a forgiving land transport system that accommodates human error and vulnerability</td>
<td>Initiates a proposed enabler action under the Safer Journeys Action Plan 2016–2020 (see below)</td>
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<td>Statement of Intent 2015–19</td>
<td>Action 1: to create an environment where technology enables smart and safe choices, resulting in fewer deaths and serious injuries for all road users</td>
<td>Proposed enabler action: Develop an automated compliance strategy by 2017 to take advantage of 21st century compliance technology</td>
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### 5. CONSTRAINTS AND ASSUMPTIONS

#### 5.1 Constraints

- No new money is available – additional investment e.g. in ICT, or other infrastructure to support automated compliance will need to be funded via the National Land Transport Fund, so some trade-offs or re-prioritisation may be required.
- Legislative change is unlikely until after the 2017 election so transitional arrangements will probably be needed.
- Relevant agencies already have full work programmes and competing priorities, limiting their ability to contribute to the workstream.

#### 5.2 Assumptions

This Workstream Initiation Document is based on the following assumptions:

- The NZ Transport Agency, Ministry of Transport, and New Zealand Police will provide resources, subject to the constraints noted, from existing baselines to complete the agency level of the workstream by the end of 2016. Ministerial approval may take longer.
6. WORKSTREAM SCOPE

6.1 Scope

The scope of this project includes:

- Developing an shared vision for the future of automated compliance
- Options for expanding the use of, and optimising investment in, automated compliance technologies
- Investigating what technical, institutional, ethical or funding barriers exist to wider adoption and operation of automated compliance as part of an integrated intelligent transport system and options for resolution
- Developing a framework for assessing which organisation(s) should own and operate automated devices in different situations and who should be responsible for particular functions such as prosecution, processing of notices and infringement fee collection, as well as audit and calibration of automated compliance technology
- Developing a high level “road map” and prioritisation criteria for the adoption of automated compliance systems to guide planning and investment
- Developing high level operating principles so there is a consistent approach to implementation across different technologies and risks

6.2 Exclusions

The scope of this workstream excludes:

- Alternatives to the current funding model such as hypothecation of fees and fines revenue.
- Use of transport related automated compliance systems for general criminal law enforcement
- Congestion charging and other forms of road pricing
- Re-calibration of penalties for infringement offences and whether demerit points should be applied to offences detected by cameras or other automated compliance systems.
- The scope of the two related workstreams on:
  - Police’s proposal to transfer the safety camera network to the Transport Agency; and
  - The workstream coordinating current automated compliance needs on key Roads of National Significance projects
The working group will need to be mindful of these areas of possible future development, maintain close contact with the two related workstreams, and not make recommendations for strategic direction that would close off future initiatives.

7. **KEY ISSUES**

A preliminary assessment has identified the following issues:

- **Government** – what is the appetite for change? How does this work link to whole of government approach to infringement and other issues?
- **Stakeholder engagement** – identification of key partners and their issues, developing partnerships
- **Legal** – enabling framework needed if the Transport Agency’s compliance role is to expand, and to allow for increasing the range of infringing behaviours potentially subject to automated compliance
- **Agency roles and responsibilities** including outsourcing options or inclusion of other government agencies
- **Operating principles** – for instance, criteria for deciding to use automated compliance, site selection, targeting to risk, procurement, communication plans (local and national), monitoring and evaluation of effectiveness
- **Local government interface** – use of automated compliance on local roads, whether other road controlling authorities will operate/own/invest in automated compliance, involvement in decision making
- **Privacy protection and data sharing** – redefining expectations of privacy on public roads, facilitating real-time sharing of information from compliance (detection) systems and registry systems
- **Financial** – impact of changing roles on Road Policing Programme, NLTP and Transport Agency operations
- **ICT capacity and management**, up–coming investment requirements
- **Workforce planning**
- **Community level** – possibilities for community engagement and involvement in some aspects of delivery
- **Developing a road map** (priorities) for the introduction of new compliance technologies – what next after safety cameras? What should be in place in 5, 10 or 15 years?
8. RISKS

- Stakeholder/public perceptions about revenue gathering and extension of this by stealth
- Lack of expertise in new technologies
- Lack of system capacity to implement significant change
- Uncertainty about benefit-cost ratios (investment required vs expected safety and/or efficiency gains)
- Not achieving deadlines/opportunities for inclusion in NLTP – too late to be helpful
- Lack of alignment with other priorities
- Pace of technological change outstrips system capacity to implement (constant catch-up) – need to have a living strategy rather than being too prescriptive
- Vulnerability of new technologies to any instance of failure – any malfunction can lead to loss of credibility and closing of programmes
- Resources for workstream are insufficient to develop the product needed

These will need to be further analysed and mitigations identified. The NZ Transport Agency will develop and manage a risk register.

9. INTERFACES AND DEPENDENCIES

9.1 Road Policing Programme 2015–18

The 2015–18 Road Policing Programme provides for three-year National Land Transport Fund investment and the work programme of road policing activities to be delivered for 2015/16. The RPP work programme for 2016/17 and 2017/18 will be put in place during 2015/16 and will take into consideration the findings of the Police strategic change programme, Policing Excellence: the Future. Based on this Police will also develop a 5 year action plan for Road Policing to 2020.

Police has recently formally proposed that the safety camera network be transferred to the Transport Agency. A separate workstream is being set up to investigate the proposal in detail. Information from this workstream may also help in inform the development of strategic direction.
9.2 Development of Government Policy Statement 2018 and NLTP 2018–21

Policy decisions relating to automated compliance will need to be made early in 2017 to enable incorporation in the 2018 GPS and the 2018–21 NLTP. Adequate lead-in time will also be needed for any regulatory changes. If Police is to exit automated compliance, possible transitional arrangements would need to be included in the 2017/18 RPP, and there may be effects on activity class definitions and funding allocations in the 2018 Government Policy Statement.

9.3 Implementation of Safer Speeds Programme

This priority action from SJAP 2013–2015 has now transitioned to the implementation or business as usual phase. The Safer Speeds Programme development work may provide some resources and guidance for addressing other areas of road safety risk, as well as on stakeholder and community engagement.

9.4 Continuing work on Intelligent Transport Systems

Both the Ministry of Transport and the Transport Agency will need to consider the interface between the expanding use of ITS and the place of automated compliance systems within this. Issues could include:

- Ability of systems to work together/communicate
- Interface between network management and compliance functions
- How third party involvement in system development, operation and maintenance is managed
- Procurement (achieving economies of scale, avoiding ad hoc developments)
- Technology standards – compliance technology needs to meet standards for gazetting as approved traffic surveillance devices and be able to withstand challenges to accuracy and reliability in court proceedings
- How compliance systems can communicate with vehicles, drivers and other system users
- Shared regulatory issues.

The Transport Agency will ensure liaison between automated compliance and ITS strategic framework developments.

9.5 Other interface/dependency issues
Development of the strategic direction will also consider:

- Relationship to and possible effects on the Ministry of Justice collections system
- Relevant work on new technology by the Ministry of Business, Innovation and Employment
- How automated compliance could support workplace health and safety legislation and policies.

10. WORKSTREAM DELIVERY

10.1 Approach

10.1.1 Developing a shared vision for automated compliance

A shared and engaging vision for automated compliance is needed to enable the transport sector to maximise the opportunities provided by automated compliance to improve both safety and efficiency. Conversations within organisations and with stakeholders may be an effective approach. These could look at developing a high-level vision or purpose statement underpinned by a clear articulation of benefits (value) to the system user.

Here is a starter:

*By [2030] Intelligent Transport Systems will underpin transport management in New Zealand. Automated compliance systems will be a fully integrated part of ITS. They will form a key part of system design, together with measures such as infrastructure design, in-vehicle features, road user education and incentives to promote both safety and efficiency. Automated compliance systems will:*

- Deliver significant and on-going benefits for road safety, network efficiency and environmental sustainability
- Be tailored to risk (whether to safety, efficiency or sustainability)
- Provide value for money
- Be perceived by system users as fair, credible and essential to a safe and efficient network.

10.1.2 Developing a road map

Building on the long term vision this workstream could also develop a road map (not as prescriptive as an action plan) which could broadly indicate the priority order for introducing additional applications for non-compliance (which will offer the greatest safety and/or efficiency gains) and the dependencies involved.

10.1.3 Operating principles

---

Working draft – not NZ Transport Agency or Government policy – 09/05/2016
In developing consistent operating principles for automated compliance, the working group will consider:

- The evidence base for the effectiveness of a range of automated compliance systems
- International best practice for deployment including:
  - Targeting to risk and available data sources for assessing risk
  - Performance measurement – standards and targets
  - Monitoring and evaluation
  - Community support
  - Fit with other interventions
- Investment Logic Mapping (perhaps developing an exemplar)
- Options for institutional roles and responsibilities – strengths and weaknesses / benefits and costs
- Funding options including hypothecation of compliance revenue
- Establishment, operational and transaction costs of automated enforcement vs traditional enforcement
- Stakeholder engagement and communication

10.2 Work breakdown structure and timeline (indicative)
11. WORKSTREAM GOVERNANCE & WORKING GROUP

As part of the implementation of the Safer Journeys Action plan 2016-2020, this workstream will be overseen by the National Road Safety Management Group and National Road Safety Committee.

Working Group

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORGANISATION</th>
<th>PROJECT ROLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Dugdale</td>
<td>NZ Transport Agency</td>
<td>Workstream lead</td>
</tr>
<tr>
<td>Slobhan Bakker</td>
<td>NZ Transport Agency</td>
<td>Research and advisory support</td>
</tr>
<tr>
<td>Steve Penman</td>
<td>NZ Transport Agency</td>
<td>Liaison with Intelligent Transport Systems work</td>
</tr>
<tr>
<td></td>
<td>Ministry of Transport</td>
<td>Coordinate Ministry input</td>
</tr>
<tr>
<td>Inspector Peter McKennie</td>
<td>NZ Police</td>
<td>Coordinate Police input</td>
</tr>
<tr>
<td>Robyn Gardener</td>
<td>Accident Compensation Corporation</td>
<td>Coordinate ACC input</td>
</tr>
</tbody>
</table>

12. STAKEHOLDER MANAGEMENT AND COMMUNICATIONS
In consultation with partner agencies the Transport Agency will lead development of a communications and engagement plan.
Hi Greg and Sandy,

Thanks for getting back to us so quickly on the material sent through last week. I've been slow to send new material through this week – I've been away unwell for a large chunk of the week.

Please find attached though the draft 'input' paper for GPS 2015 for Road safety.

Again, the purpose of sending this to you is twofold –

- one to get any comments from you on the content (tracked comments/questions welcome), and
- two, to ask whether you think any of the material should be withheld.

Just a heads up – we will send more papers through next week. We need to get the recommended OIA response to the Minister's office by 6 August. Our aim is to give you as much time as possible though.

Again, we'd be grateful if this material isn't circulated further.

Kind regards,

Shelley

Shelley Tucker
Policy Manager (Programme)
Ministry of Transport – Te Manatū Waka

www.transport.govt.nz
Cover page to be added.
Executive Summary Road Safety – GPS 2015

The Government policy response to road safety is contained in the Safer Journeys Strategy (Safer Journeys). As part of Safer Journeys, actions plans are developed to implement the strategy.

Safer Journeys is a safe systems, cross-portfolio approach to increasing safety on New Zealand roads.

While Safer Journeys defines the road safety strategy, the Government Policy Statement on land transport (the GPS) determines the resources available to implement large parts of Safer Journeys: it determines the overall amount spent on road safety relative to other GPS spending; and what is spent on different road safety activities (that is road policing, road safety promotion and the safety of roading infrastructure).

Safer Journeys and the action plans are guiding improvements in road safety, as seen by decreased serious injury and death on New Zealand roads. However, the social cost of road crashes is still high (estimated at $3.14bn in 2012) and New Zealand could be achieving better results given that greater levels of road safety are achieved in other countries.

Maintaining momentum toward fewer deaths and serious injuries on New Zealand roads is an important, ongoing goal. In supporting the achievement of this goal, good quality decisions about road safety spending are needed to be made through the GPS.

However, two difficulties arise in determining cost-effective resource allocations to road safety:

- attribution difficulties; that is, it is difficult to isolate the effectiveness of different interventions (GPS and non-GPS) on reducing death and serious injuries and to estimate their efficiency;
- while the amount spent on some road safety interventions is known (policing and road safety promotion) it is not clear how much is being spent on road safety interventions overall.

Current GPS 2012 allocations to road safety are made in two activity classes (see Table 1)

Table 1: GPS 2012 funding allocations for road safety activities 2012/13 – 2013/15

<table>
<thead>
<tr>
<th>Activity class</th>
<th>Funding ranges</th>
<th>Forecast funding ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$m</td>
<td></td>
</tr>
<tr>
<td>Road promotion safety</td>
<td>34-55 34-55 34-55 34-60 34-60 34-60 34-60</td>
<td></td>
</tr>
</tbody>
</table>

However, the GPS only includes indications of how much of the State highway and local road expenditure is expected to be safety related (see Table 2).

**Table 2: Safety related roading expenditure 2012/13 – 2013/15**

<table>
<thead>
<tr>
<th>Activity class</th>
<th>Indicative Funding ranges $m</th>
<th>Forecast funding ranges $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>State highways</td>
<td>150-240</td>
<td>150-240</td>
</tr>
<tr>
<td>Local roads</td>
<td>80-120</td>
<td>80-120</td>
</tr>
</tbody>
</table>

All other things being equal, the current approach to allocations in the GPS and other strategies may continue to deliver road safety improvements. However, without gains in understanding the efficiency and effectiveness of what may be a large amount of safety expenditure, it is unclear how opportunities to achieve better road safety results would be captured.

Better understanding of the relative efficiency and effectiveness of road safety expenditure requires a clear and transparent way of measuring the amounts allocated and spent on road safety through the GPS:

- the amount spent in road safety policing and on road safety promotions is measurable, although understanding the effectiveness of this expenditure is more challenging. Building on earlier work, the NZ Police are, for example, working to better establish the links between policing effort and its effectiveness on road safety outcomes.

- the amount spent on safety improvements on roads is unclear. The NZ Transport Agency estimates of National Land Transport Fund (NLTF) safety expenditure on road infrastructure vary between each other and compared to the GPS 2012 indications. The size of the estimates of safety spend on roads, including the indicative amount identified in GPS 2012, is large.

An alternative approach investigated through the GPS 2015 analytical process identified that it is possible to increase the clarity and ongoing stability of estimates of road safety costs embedded in roading infrastructure. This means that there is an opportunity under GPS 2015 to set up better support for making GPS allocations, for delivering Safer Journeys and to be responsive to shifts in emphasis in keeping with Safer Journeys over time.

Given the difficulty in making road safety allocations under the GPS in the presence of a significant information gap, it is proposed that:

- Safer Journeys continue to be referenced in GPS 2015 as the key strategy contributing to the overall effectiveness in increased road safety, with GPS road safety expenditure reported against Safer Journeys;

- a priority action under road safety in the GPS 2015 is to increase the clarity and transparency of reporting of the road safety components of infrastructure spending.
This proposal would be taken forward through the adoption of Option 2 in the paper. Option 2 is a modified, extended version of the status quo with explicit reporting requirements that would close the information gap about the amount spent under the GPS on road safety.
Road Safety Analytical Tool – GPS 2015

Road Safety

The key issue to be addressed for road safety in the GPS 2015 is:

*How can the GPS best contribute to meeting the Government’s long term goal that is set out in its vision for road safety:*

*“a safe road system that is increasingly free of death and serious injuries”*

In supporting the achievement of this goal, good quality decisions about road safety spending are needed to be made through the GPS. Understanding the relative efficiency and effectiveness of road safety expenditure requires, in the first instance, a clear and transparent way of measuring the amounts allocated and spent on road safety through the GPS.

1. Status quo

In 2010, the Government launched Safer Journeys, New Zealand’s Road Safety Strategy (2010 to 2020). The purpose of Safer Journeys is to guide improvements in road safety to 2020. Safer Journeys is a “safe system” approach that looks at all elements of the road system (roads, speeds, vehicles and road use), recognising road safety as being everyone’s responsibility.

So far, two Action Plans have been produced. Most of the actions in the first Action Plan (Safer Journeys Action Plan 2010-2012) have been completed. Some of the actions from the first plan have become business as usual or are incorporated into Safer Journeys Action Plan 2013-2015, which is currently being progressed. It is anticipated that work will begin in the latter part of 2014 to develop the next Action Plan.

Good progress on road safety has been made, with a continuation of the trend that began in the mid 1990s of fewer road deaths and serious injuries, as illustrated below:
**GPS and Safer Journeys**

The recent assessment of the total social costs of all motor vehicle injury crashes has reduced from $3.67 billion in 2010 to $3.14 billion in 2011 (at June 2012 prices)\(^2\). The NZ Transport Agency reports an 8.1 percent decrease in serious road injuries and deaths in 2012/13. This represents a notable gain in road safety.

GPS 2012 noted the priority given to implementing the Government’s road safety strategy in Safer Journeys, with the focus of the NZ Transport Agency, local authorities and approved organisations directed through the Safer Journey Strategy and Action Plans. Actions across the four elements of the Safer System (that is, roads, speeds, vehicles and road use) are reflected in the National Land Transport Programme.

Safer Journeys does not set targets for death and injury reduction. Instead, it identifies areas of greatest risk that need to be addressed over the 10 year duration of Safer Journeys for actions by the agencies with key responsibility for road safety (NZ Transport Agency (NZTA), Ministry of Transport, New Zealand Police and ACC). This process is overseen by the National Road Safety Committee.

The GPS determines the resources available from the National Land Transport Fund (NLTTF) to implement large parts of Safer Journeys. The GPS determines the overall road safety spend relative to other GPS spending and what is spent on different road safety activities (i.e. road policing, road safety promotion and roading infrastructure).

Current GPS 2012 allocations to road safety are made in two activity classes (see Table 1).

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DRAFT ONLY
Table 1: GPS 2012 funding allocations for road safety activities 2012/13 – 2013/15

<table>
<thead>
<tr>
<th>Activity class</th>
<th>Funding ranges $m</th>
<th>Forecast funding ranges $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road promotion safety</td>
<td>34-55</td>
<td>34-55</td>
</tr>
</tbody>
</table>

However, the GPS only includes indications of how much of the State highway and local road expenditure is expected to be safety related (see Table 2).

Table 2: Safety related roading expenditure 2012/13 – 2013/15

<table>
<thead>
<tr>
<th>Activity class</th>
<th>Indicative Funding ranges $m</th>
<th>Forecast funding ranges $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>State highways</td>
<td>150-240</td>
<td>150-240</td>
</tr>
<tr>
<td>Local roads</td>
<td>80-120</td>
<td>80-120</td>
</tr>
</tbody>
</table>

2. Problem and opportunity identification

A significant proportion of funding for road safety (and, therefore, in resourcing Safer Journeys) is made through the NLTF.

While overall the strategies implemented under Safer Journeys have been effective in reducing road trauma, there are opportunities at the GPS level for improved efficiency and effectiveness in the allocation of resources and in reporting on how the NLTF is used to support the Government's road safety strategy.

Two broad difficulties arise with determining cost-effective resource allocation through the GPS to road safety activities:

- attribution difficulties: that is, it is difficult to isolate the effectiveness of different interventions (GPS and non-GPS) in reducing death and serious injuries;
- it is not clear how much is being spent on road safety interventions overall. As shown in Table 1, it is clear in some areas, but not in others (see Table 2). This makes it difficult to assess the amount of resource and effort being invested in different road safety approaches. It also means that there is, at best, a weak basis for considering effectiveness.
These two issues are discussed in more detail below.

**Attribution challenges: what is contributing to road safety improvements?**

A 2013 New Zealand study investigated the factors behind the dramatic decrease in the New Zealand road toll in 2011\(^3\). Significant factors found to influence road deaths over the past decade (separate to the long run trend) were changes in the real petrol price index, changes in real product wages, and changes in motorcycle registrations\(^4\).

A more recent Infometrics study\(^5\) suggests that vehicle design and type have stronger impacts on reducing road trauma than initiatives that attempt to elicit more positive behaviour change or the roads themselves. As illustrated in Table 1, and noting the important caveats around estimates of what contributed to deaths prevented since 1990\(^6\) of the approximately 12,300 deaths prevented\(^7\), about 10,000 of these deaths prevented could be attributed to:

- vehicles (about 47 percent). This includes vehicle improvements (10 percent) and reduced numbers of motorcycles (34 percent);
- roads (about 18 percent);
- drivers (about 35 percent). The factors included here involve the combined effects of speed (9 percent), advertising (16 percent) and breath testing (11 percent)\(^8\).

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\(^3\) Infometrics, Martin Jenkins, Otago and Monash Universities (2013), *An analysis of potential factors behind the 2011 reduction in New Zealand road fatalities*. This study did not seek to explain the longer term downward trend in road deaths.

\(^4\) Infometrics, Martin Jenkins, Otago and Monash Universities (2013), page 4.

\(^5\) Infometrics (2013) *Econometric analysis of the downward trend in road fatalities since 1990*.

\(^6\) The estimates used in the 2013 Infometrics study provide an approximate guide only. The data does not include potentially important effects such as the time between getting medical treatment and a road crash, changes in travel mix (e.g. urban compared to rural travel) as well as potential lags effects on the data. These [econometrically analysed – our insertion] past trends may not be good predictors of future trends: using benefit cost analyses for safety projects is likely to be a more reliable approach.

\(^7\) That is the difference in the number of road-related deaths at the beginning of the period compared to the number of deaths at the end of the period (i.e. a difference of 12,300).

\(^8\) Note that these numbers are rounded so may not add to the approximate numbers indicated.
Table 3: Influences on road safety and areas funded by the GPS

Of estimated deaths prevented (1990 – 2012), about 10,000 of 12,300 could be explained approximately by:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Infrastructure</th>
<th>Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>47%</td>
<td>18%</td>
<td>35%</td>
</tr>
<tr>
<td>Not GPS</td>
<td>GPS activity</td>
<td>Some GPS activity</td>
</tr>
</tbody>
</table>

* This includes combined effects

Based on Inometrics Study (2013)

Of the three groups of factors in Table 3, the GPS has direct relevance only to infrastructure (roads) and the driver. In relation to the driver, it is difficult to separately identify the contribution made by areas covered by the GPS (ie road policing and road safety campaigns) and areas outside the GPS. In addition, road policing and road safety promotion campaigns will not account for the full 36 percent estimated in the study.

Some actions are already being taken to improve understanding of the effectiveness of safety investments. For example, the NZ Police are currently mapping the effects of front-line road policing effort on road safety outcomes. This is based on earlier work to improve these linkages. Improving the clarity and understanding of safety expenditure on roads would be a useful next step.

Allocation challenges: what is spent on road safety under the GPS?

GPS allocations for road safety spending on roads are indicative only

While the amounts available to be spent on road policing and road safety promotion are allocated to activity classes, helping to provide a basis for work to better understand effectiveness, the remainder of road safety spend is indicative of the amount spent on road safety in other GPS activity classes, as seen in Table 4.
TABLE 4: GPS 2012 Indications of Road Safety Spend

<table>
<thead>
<tr>
<th>National Land Transport Fund</th>
<th>Road Safety Spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012/13</td>
<td>$million</td>
</tr>
<tr>
<td>2013/14</td>
<td>$million</td>
</tr>
<tr>
<td>2014/15</td>
<td>$million</td>
</tr>
<tr>
<td>Road Policing</td>
<td>315-335</td>
</tr>
<tr>
<td></td>
<td>326-335</td>
</tr>
<tr>
<td></td>
<td>335-345</td>
</tr>
<tr>
<td>Road safety promotion</td>
<td>34-55</td>
</tr>
<tr>
<td></td>
<td>34-55</td>
</tr>
<tr>
<td></td>
<td>34-55</td>
</tr>
<tr>
<td>State highways</td>
<td>150-240</td>
</tr>
<tr>
<td>(indicative)</td>
<td>150-240</td>
</tr>
<tr>
<td>Local roads</td>
<td>80-120</td>
</tr>
<tr>
<td>(indicative)</td>
<td>80-120</td>
</tr>
<tr>
<td>Total identified in GPS 2012</td>
<td>529-750</td>
</tr>
<tr>
<td></td>
<td>539-750</td>
</tr>
<tr>
<td></td>
<td>549-750</td>
</tr>
</tbody>
</table>

Source: GPS 2012

Estimates of what is spent on road safety on roads vary a lot.

The NZ Transport Agency’s estimates of expenditure on road safety over the period of 2012-2015 differ from the amounts indicated in the GPS 2012. For example, estimates in the NZ Transport Agency’s Statement of Intent 2013-2016 reports about $64 million to $129 million more being spent on safety in roads than indicated in GPS 2012. In the out-years, these estimates rise to over $360 million. A later set of NZ Transport Agency estimates for 2012/13 (February 2014) indicated a difference of about $7.5 million compared to the indicative GPS 2012 amount. Variation in estimates is largely attributed to expert opinion that is not further discussed (eg. to identify the methods or issues with the methods used).

The extensive use of, and differences in, estimated road safety spend on roading infrastructure adds to the difficulty of identifying the efficiency and effectiveness of road safety expenditure in this area. To increase this understanding, it is necessary to reduce the extent to which estimates are used, and where estimates remain necessary, to increase the transparency as to how these estimates were generated and why they may vary.

There are ways that State highway and local road expenditure on road safety can be made clearer.

The GPS policy team initiated an internal exercise to try and better understand the amount spent on roads contributing to safety. It used a study of 150 cost benefit assessments to

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9 Different estimates and comparisons between them are included in the Annex.
10 Using Table B in the Annex, the top end of the ranges for safety spend on roads in Table 2 for the 2012/14 (i.e. $360 million) subtracted from the sum of assumed safety spend on State highways and local roads for 2012/13 (i.e. $489 million) comes to $129 million.
assess safety benefits generated by roading projects\textsuperscript{11}. Road safety benefits on State highways and local roads were then categorised in the following ways:

- safety benefits considered to be \textit{conjoint}:
  - where the safety benefits occur as a result of a project that would have been undertaken in any case. These benefits become part of the benefits in the benefit-cost assessment of the project;
  - where the safety benefits are instrumental to moving a project with other motivations “over the line”. In this case, the project is desired, not for its safety attributes, but for its other properties. On this basis, safety benefits will be generated but become part of the benefits in the benefit-cost assessment of the project;

- safety projects that are undertaken \textit{primarily} to improve safety.
  - where the project is undertaken primarily to provide additional safety that would not otherwise have occurred. This type of safety project is important for the purpose of identifying road safety spend on State highways and local roads under the GPS.

This method identified percentages of projects that are either conjoint or primarily safety projects, applying these findings to road-based work categories. Using this approach, and the NZ Transport Agency’s estimates, Table 5 shows the estimates of safety expenditure on roads made (for 2008/09 to 2011/12).

\textbf{Table 5: Estimates of road safety expenditure on roads}

<table>
<thead>
<tr>
<th></th>
<th>2008/09 $m</th>
<th>2009/10 $m</th>
<th>2010/11 $m</th>
<th>2011/12 $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ Transport Agency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State highways</td>
<td>315</td>
<td>380</td>
<td>365</td>
<td>309</td>
</tr>
<tr>
<td>Local roads</td>
<td>281</td>
<td>270</td>
<td>285</td>
<td>289</td>
</tr>
<tr>
<td>Statement of Intent estimate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State highways and local roads</td>
<td>596</td>
<td>650</td>
<td>649</td>
<td>599</td>
</tr>
<tr>
<td>Conjoint safety spend</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State highways</td>
<td>201</td>
<td>199</td>
<td>187</td>
<td>201</td>
</tr>
<tr>
<td>Local roads</td>
<td>203</td>
<td>220</td>
<td>208</td>
<td>180</td>
</tr>
<tr>
<td>State highways and local roads</td>
<td>404</td>
<td>419</td>
<td>395</td>
<td>381</td>
</tr>
<tr>
<td>Primarily safety spend</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State highways</td>
<td>143</td>
<td>145</td>
<td>139</td>
<td>118</td>
</tr>
<tr>
<td>Local roads</td>
<td>156</td>
<td>154</td>
<td>144</td>
<td>157</td>
</tr>
<tr>
<td>State highways and local roads</td>
<td>299</td>
<td>299</td>
<td>283</td>
<td>275</td>
</tr>
</tbody>
</table>

The NZ Transport Agency’s Statement of Intent estimate and the estimate of conjoint safety expenditure across the (large) roading programme suggests a significant commitment of resource for safety on roads. This is a potentially important finding for assessing relative

cost-effectiveness given, at most, the indicative level of expenditure in the GPS is about $350 million per annum.

Overall, this investigation suggests that greater insight first into the amount of spending contributing to safety and then into the efficiency and effectiveness of National Land Transport Fund (NLTF) expenditure on road safety could occur through:

- those safety projects undertaken primarily to improve safety (ie that provide additional safety that would not otherwise have occurred) being identified as the amount purchased as road safety on local roads and State highways;

- identifying, in the relevant benefit cost assessments, the conjoint safety benefits arising from other roading projects whose primary purpose is not safety. These safety benefits could be reported as conjoint safety benefits;

- estimates of the amount being spent on road safety becoming more consistent. The basis for assumptions about contribution to safety would also need to be clear and transparent.

**Links to strategy: Safer Journeys**

As indicated earlier, the Government’s road safety strategy is Safer Journeys. It is important that NLTF spending be linked to Safer Journeys. It is likely, over the development of Safer Journeys and its supporting action plans, that it will become increasingly important to know what is being spent on road safety given:

- emerging information on the major factors contributing to decreased deaths and serious road injuries (affecting future effectiveness); and

- a change in the emphasis and type of intervention (eg use of intelligent transport systems) as areas of expected gains in road safety are identified (affecting future efficiency and effectiveness).

However, unless there is greater transparency in the efficiency and effectiveness of NLTF spending on road safety, signals important for Safer journeys will be unclear or muted for decision-makers to move resources to better support the strategy or to adopt different technologies or new approaches to safety on roads.

3. **Objectives**

The relevant GPS objectives for assessing road safety options are:

- a transport system that is increasingly free of death and injury;

- efficiency; and

- effectiveness.

4. **Options identification**

As the two key issues identified in the GPS road safety area are precursors to making any adjustments in allocations or spending priorities, at this point in time options are limited.
Option 1: Continuing the status quo (ie GPS 2012 allocations and settings)

The status quo option involves:

- Government policy on road safety (Safer Journeys) continuing to be implemented (as it would be under any of the proposed options)
- Safer Journeys Action Plans would identify the areas of focus and action. Current downward trends in road trauma are likely to continue at a similar rate (assuming other influences do not change significantly).
- NZ Police continue to map road policing effort to road safety outcomes. This would be used to assess and report on the effectiveness of NLTF road policing expenditure.
- Funding would continue at the existing levels in the GPS 2012 and in the same proportions allocated among the current activity classes.

The status quo may deliver the most cost-effective approach to improving road safety and may continue to deliver road safety improvements.

Under the status quo, concerns about the efficiency and effectiveness of road safety expenditure at the GPS level will persist as assumptions continue to be made around a significant area of safety expenditure. Continuing with the status quo is likely to hamper the movement of resources within existing funding allocations to areas where they are better able to address areas of road safety concern and forgo opportunities for actual and rate of improvements in road safety.

Option 2: Clearer reporting of GPS road safety expenditure

Under this option, which is an extension of the status quo:

- The GPS would require clearer identification and then reporting of road safety expenditure. Reporting would be required against Safer Journeys and increased expectations introduced regarding the efficiency and effectiveness of road safety expenditure, with particular emphasis on making improvements in understanding how much is spent on road safety in roading infrastructure.
- There would be little or no change to current allocations to road policing and road safety promotion.
- Safer Journeys continues to be implemented.
- Action Plans continue to identify areas of focus and action.
- NZ Police would continue to map road policing effort to road safety outcomes. This would be used to assess and report on the effectiveness of NLTF road policing expenditure. It may be difficult in this period to identify the efficiency of this expenditure, but in GPS 2015 this may be set as an expectation for the future. NZ Police may also explore increased efficiency. For example, under Safer Journeys, a move to increased use of alternative technologies may deliver a better rate of improved road safety outcomes from the resources available.

This option increases the level of information on the efficiency and effectiveness of NLTF road safety expenditure. It would represent a necessary step toward better supporting decision-making about GPS allocations for road safety in future GPSs.
An extension of Option 2 was considered. The extension would separately identify road safety expenditure from within roading activity classes and include them in a specific location under Service Level Improvements for new roads (State highways and local roads) from 2016/17 forward.

However, if the policies and results expected from road safety expenditure on roads are clear, then there may be minimal gain from this extension of Option 2. Such changes would also need to be consistent with other changes proposed to activity classes generally within the GPS.

Further option considered: Reallocation of road safety funds from roading activity classes to higher value safety projects

The GPS Policy Team considered a further option that would involve the same transparency changes proposed under Option 2, but with a reallocation of funds from roading activity classes for safety on roads (say $60 million) to higher value uses (based on benefit cost analysis). It is possible that there would be greater gains in efficiency under this option than under Option 2, with additional gains in effectiveness arising from a more targeted and transparent allocation of road safety funds. It may also potentially provide a useful signal that funds that are not clearly contributing to a result are potentially at risk.

However, this is a high risk option as it would implement the direction of a solution ahead of addressing the problems involved with making GPS road safety allocations in the first instance, and without evidence to support this direction. There is a risk that the high-end estimates of expenditure on safety in roads may indeed be at the level of expenditure required in this area to maintain current rates of road safety improvements. It would also be difficult, at least initially, to identify whether reallocating these funds to other GPS road safety activities would result in better road safety outcomes.

5. Engagement

Engagement about road safety and the GPS has included meetings with: the National Road Safety Committee (specifically, 16 October 2013), the NZ Police, and the NZ Transport Agency.

6. Impact analysis

The impact of the proposed options have been discussed, in part, above. The compliance costs for local government are likely to be low as local government already identify road safety components in roading projects separately in benefit cost assessments prepared for these projects. There is likely to be a similarly limited impact for the NZ Transport Agency, although these areas have not been canvassed separately.

The impact of improved transparency and identification of road safety expenditure is difficult to assess. It has been identified generally as supporting decision making through the availability of better information on cost-effectiveness.

7. Conclusions and recommendations

Advising on the amount that should be spent on road safety under a GPS is difficult in any circumstances due to attribution problems. However, the effectiveness of different areas of road safety spend can be addressed where the costs are clear.

While the amount spent on road policing and on road safety promotion is clear, this is not the case for safety spend on roading infrastructure. However, it is feasible to reduce the extent to
which this spending is indicative and estimated, and to increase the transparency around any estimates that are required to be used. This would provide a better basis for assessing the efficiency and effectiveness of road safety investments and for informing decisions related to the (future) efficiency and effectiveness of this important GPS area of activity.

It is proposed that GPS 2015:

- require reporting against Safer journeys
- reduce the extent to which indicative estimates of road safety expenditure are used for roading infrastructure
- increase the transparency around the estimates used for GPS-related road safety expenditure where these are used
- set expectations about reporting on the efficiency and effectiveness of road safety spending.

8. Implementation

The preferred option is to establish a more robust base for understanding GPS road safety expenditure as a necessary step toward identifying where cost effective safety investments can be made.

During the analytical phase of the GPS, the GPS policy team tested an option that would make the amount spent of road safety on roads clearer and more transparent. This was based on identifying conjoint of primarily safety spend on road infrastructure. It is not proposed that this method be the required method to address this issue. Instead, it is proposed that the GPS would provide the direction necessary (eg in activity class structure) to make these improvements, it would be up to the NZ Transport Agency to identify the best way of delivering the results.

9. Monitoring, evaluation and review

Safer Journeys has its own monitoring and review processes. It is proposed to work within these processes as far as possible.

The proposals for GPS 2015 would be to include reference to Safer Journeys and Action Plans, with GPS reporting requirements to this effect, along with requirements for increased clarity in road safety reporting under the GPS.
### ANNEX: Estimates of road safety spend

**TABLE A: Estimates of NLTF Road Safety Spend**

<table>
<thead>
<tr>
<th></th>
<th>2012/13</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$million</td>
<td>$million</td>
<td>$million</td>
<td>$million</td>
</tr>
<tr>
<td>Road Policing</td>
<td>-</td>
<td>276</td>
<td>325-335</td>
<td>335-345</td>
</tr>
<tr>
<td>Road safety promotion</td>
<td>-</td>
<td>28</td>
<td>34-55</td>
<td>34-55</td>
</tr>
<tr>
<td>State highways</td>
<td>-</td>
<td>204</td>
<td>366(^1)</td>
<td>403(^1)</td>
</tr>
<tr>
<td>Local Roads</td>
<td>-</td>
<td>249</td>
<td>174(^1)</td>
<td>176(^1)</td>
</tr>
<tr>
<td>Total based on NZTA assumptions</td>
<td>814*</td>
<td>757 **</td>
<td>1,074 (est.)*</td>
<td>1,113 (est.)*</td>
</tr>
</tbody>
</table>

* Identified in NLTF Annual Report (less regulatory activities)

** NZTA re-estimate Email, 25 February 2014

<table>
<thead>
<tr>
<th>Difference compared to GPS 2012</th>
<th>2012/13</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+64</td>
<td>+7.5 (est.)</td>
<td>+324 (est.)</td>
<td>+363 (est.)</td>
</tr>
</tbody>
</table>

\(^1\) NZ Transport Agency, Statement of Intent 2013-2016

DRAFT ONLY
### Table B: NZ Transport Agency estimates based on 2013-16 SOI figures

<table>
<thead>
<tr>
<th>National Land Transport Programme</th>
<th>Projected</th>
<th>Budget</th>
<th>Forecast</th>
<th>Assumed proportion spent on safety</th>
<th>Estimated amount to be spent on road safety / $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>New &amp; improved Infrastructure for State Highways</td>
<td>958</td>
<td>1159</td>
<td>1317</td>
<td>1320</td>
<td>20%</td>
</tr>
<tr>
<td>Maintenance, operation SH</td>
<td>354</td>
<td>313</td>
<td>334</td>
<td>356</td>
<td>25%</td>
</tr>
<tr>
<td>Renewals SH</td>
<td>188</td>
<td>222</td>
<td>227</td>
<td>225.9</td>
<td>25%</td>
</tr>
<tr>
<td>New &amp; improved Infrastructure for Local Roads</td>
<td>150</td>
<td>160</td>
<td>165</td>
<td>191</td>
<td>25%</td>
</tr>
<tr>
<td>Maintenance, operation LR</td>
<td>284</td>
<td>289</td>
<td>293</td>
<td>306</td>
<td>25%</td>
</tr>
<tr>
<td>Renewals LR</td>
<td>212</td>
<td>246</td>
<td>246</td>
<td>263</td>
<td>25%</td>
</tr>
<tr>
<td>Road safety promotion</td>
<td>31</td>
<td>32.1</td>
<td>31.9</td>
<td>33.7</td>
<td>100%</td>
</tr>
<tr>
<td>Walking &amp; Cycling Facilities</td>
<td>12</td>
<td>20</td>
<td>20</td>
<td>20.6</td>
<td>50%</td>
</tr>
</tbody>
</table>

Continued...
<table>
<thead>
<tr>
<th>National Land Transport Programme</th>
<th>Projected</th>
<th>Budget</th>
<th>Forecast</th>
<th>Forecast</th>
<th>Assumed proportion spent on safety</th>
<th>Estimated amount to be spent on road safety / $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2012/13</td>
</tr>
<tr>
<td>Research</td>
<td>4</td>
<td>5.6</td>
<td>5</td>
<td>5.1</td>
<td>25%</td>
<td>1</td>
</tr>
<tr>
<td>Management of the Funding Allocation System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>5%</td>
<td>1</td>
</tr>
<tr>
<td>Transport Planning</td>
<td>14</td>
<td>16</td>
<td>16</td>
<td>17</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Public Transport</td>
<td>299</td>
<td>316</td>
<td>310</td>
<td>343</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Road Policing Programme</td>
<td>2559</td>
<td>2833</td>
<td>3022</td>
<td>3120</td>
<td>95%</td>
<td>528</td>
</tr>
<tr>
<td></td>
<td>301</td>
<td>298.9</td>
<td>296.9</td>
<td>N/A</td>
<td>286</td>
<td>284</td>
</tr>
<tr>
<td>Total NLTP Road Safety</td>
<td>2860</td>
<td>3132</td>
<td>3319</td>
<td></td>
<td>814</td>
<td>868</td>
</tr>
</tbody>
</table>

Source: BOI 2013-16, NZ Transport Agency

Notes: Forecast expenditure across all of the NZ Transport Agency’s outputs has been estimated by applying assumed proportions of expenditure on safety. The assumed proportions are broad estimates based on past experience and current investment settings.
<table>
<thead>
<tr>
<th>State Highways operations and maintenance</th>
<th>Safety portion</th>
<th>$m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sealed pavement maintenance</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Unsealed pavement maintenance</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Routine drainage maintenance</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Structures maintenance, Environmental maintenance</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Traffic services maintenance</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Operational traffic maintenance</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Cycle path maintenance</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Level crossing warning devices</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Emergency work</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Network &amp; asset management</td>
<td>14.5%</td>
<td></td>
</tr>
<tr>
<td>Property management</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td><strong>Total State highways operations and maintenance</strong></td>
<td><strong>14%</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State highway renewals</th>
<th>Safety portion</th>
<th>$m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsealed road metalising</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Sealed road resurfacing</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Drainage renewals</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Sealed road rehabilitation, Structures component replacement, Environmental renewals</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Traffic service renewals</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Associated improvements</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Preventive maintenance</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td><strong>Total for State highway renewals</strong></td>
<td><strong>29%</strong></td>
<td><strong>61</strong></td>
</tr>
</tbody>
</table>

**Total for new and improved State highways** | **106**  |
### Table C continued

<table>
<thead>
<tr>
<th>Activity class</th>
<th>Safety portion</th>
<th>$m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Activity classes $^{13}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road safety promotion</td>
<td>100%</td>
<td>28</td>
</tr>
<tr>
<td>Road policing</td>
<td>95%</td>
<td>276</td>
</tr>
<tr>
<td>Sector Research</td>
<td>10%</td>
<td>0.6</td>
</tr>
<tr>
<td>New &amp; improved Infrastructure for local roads</td>
<td>46%</td>
<td>71</td>
</tr>
<tr>
<td>Maintenance and operation of local roads</td>
<td>35%</td>
<td>98</td>
</tr>
<tr>
<td>Renewal of local roads</td>
<td>36%</td>
<td>80</td>
</tr>
<tr>
<td>Walking and cycling</td>
<td>45%</td>
<td>3</td>
</tr>
<tr>
<td>Transport planning</td>
<td>15%</td>
<td>2</td>
</tr>
<tr>
<td>Management of the funding allocation system</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Public transport infrastructure $^{14}$</td>
<td>11%</td>
<td>0</td>
</tr>
<tr>
<td>Public transport services</td>
<td>7%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total expenditure on road safety (2012/13)</strong> $^{15}$</td>
<td></td>
<td>763</td>
</tr>
</tbody>
</table>

$^{13}$ In providing this information, NZ Transport Agency note that they have no good way of estimating the proportion spent on road safety. NZ Transport Agency calculated the estimates below by searching the investment database and tagging each project that include the word safety, to give the results below.

$^{14}$ The NZ Transport Agency notes that safety in the public transport activity classes may relate more to personal safety than road safety, hence NZ Transport Agency have estimated these as zero. The contribution of public transport to road safety by providing a safe alternative means to travel is much harder to quantify and is not reflected in this calculation.

$^{15}$ The NZ Transport Agency have broken this total into specific and conjoint safety spend as follows:

<table>
<thead>
<tr>
<th>Activity Class</th>
<th>Specific Exp$'$ 2012/13</th>
<th>Conjoint Exp$'$ 2012/13</th>
<th>Total safety Exp 2012/13 $^16$</th>
</tr>
</thead>
<tbody>
<tr>
<td>New &amp; Improved Infrastructure SH</td>
<td>$82m</td>
<td>$53m</td>
<td>$135m</td>
</tr>
<tr>
<td>Operations &amp; Maintenance SH</td>
<td>$48m</td>
<td>$51m</td>
<td>$100m</td>
</tr>
<tr>
<td>Renewals SH</td>
<td>$276m</td>
<td>$371m</td>
<td>$647m</td>
</tr>
<tr>
<td>New &amp; Improved Infrastructure local roads</td>
<td>$598m</td>
<td>$80m</td>
<td>$778m</td>
</tr>
<tr>
<td>Operations &amp; Maintenance local roads</td>
<td>$288m</td>
<td>$0</td>
<td>$288m</td>
</tr>
<tr>
<td>Renewals local roads</td>
<td>$0.5m</td>
<td>$2m</td>
<td>$2.5m</td>
</tr>
<tr>
<td>Road policing</td>
<td>$276m</td>
<td>$3m</td>
<td>$309m</td>
</tr>
<tr>
<td>Road safety promotion</td>
<td>$528m</td>
<td>$5m</td>
<td>$533m</td>
</tr>
<tr>
<td>Walking &amp; cycling</td>
<td>$3m</td>
<td>$2m</td>
<td>$5m</td>
</tr>
<tr>
<td>Sector research</td>
<td>$0.5m</td>
<td>$2m</td>
<td>$2.5m</td>
</tr>
<tr>
<td>Transport planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total expenditure on road safety</strong></td>
<td>$357m</td>
<td>$406m</td>
<td>$763m</td>
</tr>
</tbody>
</table>

$^{16}$ The total expenditure on road safety includes the specific expenditure as well as the conjoint expenditure.
<table>
<thead>
<tr>
<th></th>
<th>NZTA Statement of Intent (SOI) estimate</th>
<th>Conjoint safety spend</th>
<th>Primarily safety spend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>State highways and local roads</td>
<td>State highways and local roads</td>
<td>Difference from NZTA estimate</td>
</tr>
<tr>
<td>2008/09 ($m)</td>
<td>596</td>
<td>404</td>
<td>-192</td>
</tr>
<tr>
<td>2009/10 ($m)</td>
<td>650</td>
<td>419</td>
<td>-231</td>
</tr>
<tr>
<td>2010/11 ($m)</td>
<td>649</td>
<td>395</td>
<td>-254</td>
</tr>
<tr>
<td>2011/12 ($m)</td>
<td>599</td>
<td>381</td>
<td>-218</td>
</tr>
</tbody>
</table>
Subject: FW: Automated Compliance Strategy
Location: Ministry of Transport
Start: Wed 15/06/2016 2:00 PM
End: Wed 15/06/2016 3:00 PM
Show Time As: Tentative
Recurrence: (none)
Meeting Status: Not yet responded
Organizer: Margaret Dugdale

When: Wednesday, 15 June 2016 2:00 p.m.-3:00 p.m. (UTC+12:00) Auckland, Wellington.
Where: Ministry of Transport

Note: The GMT offset above does not reflect daylight saving time adjustments.

+----------------------------------------------------------+

Dougal,

I think you came to the introductory meeting with the NZTA team on this. I wondered if you could be the team contact for this please? If so, are you able to attend this session – short notice I know!

Thanks,

Shelley

----Original Appointment----
From: Margaret Dugdale
Sent: Thursday, 26 May 2016 2:49 p.m.
To: [redacted]; Shelley Tucker; Peter McKennie; [redacted]; Siobhan Bakker
Subject: Automated Compliance Strategy
When: Wednesday, 15 June 2016 2:00 p.m.-3:00 p.m. (UTC+12:00) Auckland, Wellington.
Where: Ministry of Transport

Hi everybody

Just confirming the date & time for our next meeting – [redacted] has booked a room at the Ministry, but won’t know which one until he’s back from leave.

Please forward this invitation to any colleagues that you think should be involved.

Will aim to get agenda & papers out by close of Monday 13th June – please feel free to send me items for inclusion. The main focus will be on sharing information and ideas as we progress the “current state assessment” phase of this workstream. We could also start on developing the framework for the draft discussion document due at the end of July.

See you then

Margaret
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Thank you Tim

Great food for thought. Let's chat about some more soon.

Cheers
Carolina

-----Original Message-----
From: Tim Herbert
Sent: Wednesday, 23 March 2016 7:05 a.m.
To: Carolina Lukkien
Subject: Road Safety

Carolina
Just mulling over our chat yesterday and combining it with a couple of other conversations. This just to start a bit of thinking, but:-

1) how about the idea of a joint work programme around safety that we develop between us, but with you taking the lead role re delivery
2) we use the work programme to bed in the Centre of expertise with us supporting the concept
3) not quite sure of your business planning processes, but we could use the 4 yr business plans we're developing as a base along with the Research Strategy to define the actual research topics;
4) we'd combine the above process with the Safety teams in NZTA/Ministry to develop the work programme
5) I'd support/inject in resource where appropriate, but we'd do this around a collaborative structure (which is what we're essentially doing with Paul);
6) would go down well with various Chief Exes etc - but also good for the Sector?

Anyway treat as a starter for 10

Cheers

Tim

MINISTRY OF TRANSPORT
Wellington (Head Office) | 89 The Terrace | PO Box 3175 | Wellington 6140 | NEW ZEALAND | Tel: +64 4 439 9000 | Fax: +64 4 439 9001 Auckland | NZ Government Auckland Policy Office | 45 Queen Street | PO Box 106238 | Auckland City | Auckland 1143 | NEW ZEALAND | Tel: +64 9 9854827 | Fax: +64 9 9854849

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##################################################
Ernst

Begin forwarded message:

From: Paul Graham
Date: 17 April 2015 17:02:07 NZST
To: Jennie Gianotti, Ernst Zollner, Cate Quinn, Campbell Moore
Cc: Andrew Knackstedt, Ernst Zollner
Subject: RE: New road safety advertising campaign: Drink-driving

Hi all,

Sorry to be late to this party, I’ve just come out of a long meeting, coincidently with Police!

The test results from the new TV advertisement were very encouraging from the angle of people’s reactions to the Police.

As a sanity check, we look at “negative” impacts, which are those comments which show an adverse reaction to the advertisement. In this case there were a few comments questioning why the wife always has to drive, and whether the couple were being irresponsible parents – nothing questioning the role nor the nature of the Police’s enforcement.

Other comments made about the role of the Police in this advertisement included:

“Should they call it a ‘boozed up’?” [we asked this at the time too, and the answer is yes, that’s how it is referred to in the Police statement]

“I feel sorry for the kids seeing their mum being taken away by the Police.”

“Police aren’t like that in real life – nice, and accepting.”

“I think it shows the cops can be anywhere anytime.”

As you can see, I’m struggling to find any negativity to do with the Police in this advertisement. They have in fact come across very well, as a normal and accepted part of drinking and driving. People were far more upset about the woman who was driving after drinking, and about the new reality of a lower drink-drive limit.

The ad has high relevance (70%) and likeability (also 70%) with its target audience, and good takeout message of “there is a lower alcohol limit” and “know your limit”. The target audience is very broad this time, normally good, law abiding citizens of both genders aged in their 30s and 40s, and therefore pretty representative of the public in general.

Cheers,
Paul
Hi Ernst

I think the following points are worth noting:

- People may find this unsettling, and that’s the point. The ad shows the gravity of the situation and realistically shows events which would unfold when a driver blows over 250 micrograms in a breath screening test.

- While Police officers will always remain empathetic and professional, it is not uncommon for people to be surprised by the formality of the procedure.

- The driver would be told “That’s over 250 micrograms. I now require you to accompany me to the booze bus or other such place for the purpose of an evidential breath test, blood test or both. You have the right to remain silent. You do not have to make any statement. Anything you say will be recorded and may be given in evidence in court.”

- The wording has been through NZ Police legal, road policing support group, Counties Manukau Police and Wellington Police so is technically correct.

I’m following up with Paul Graham on the highlights from the testing to share – as you know we run a very evidence based advertising campaign to ensure it works for our audience any significant issues would have been addressed in the final edit.

Regards

Jennie Gianotti
Manager Network User Behaviour

withheld under section 9(2)(a) of the Official Information Act 1982

Please consider the environment before printing this email

From: Ernst Zollner
Sent: Friday, 17 April 2015 2:49 p.m.
To: Jennie Gianotti
Cc: Andrew Knackstedt
Subject: RE: New road safety advertising campaign: Drink-driving

Andy and I both with Mike about Police "coming over heavy" – is it necessary to have this?
From: Jennie Gianotti
Sent: Friday, 17 April 2015 2:47 p.m.
To: Ernst Zollner
Subject: RE: New road safety advertising campaign: Drink-driving

Hi Ernst

Police were on roadside and have checked the advert. I'm just getting them to put some words together for me re Mikes comments.
Regards

Jennie Gianotti
Manager Network User Behaviour

Please consider the environment before printing this email.

From: Ernst Zollner
Sent: Friday, 17 April 2015 2:05 p.m.
To: Jennie Gianotti
Cc: Rachel Prince; Diane De Deker
Subject: FW: New road safety advertising campaign: Drink-driving
Importance: High

Hi Jennie

Perhaps more for your team?

Cheers, Ernst

From: Mike Noon
Sent: Friday, 17 April 2015 1:50 p.m.
To: Diane De Deker
Cc: Simon Douglas; Ernst Zollner
Subject: FW: New road safety advertising campaign: Drink-driving
Importance: High

Diane

I just viewed and listened to the new BAC TVC. The targeting looks perfect. It is a powerful advert but I do have a question and concern.
This is, “Why is the background voiceover for this advt giving a message of the police “reading the rights lines” to the driver“ .... You have a right to remain silent etc?

At 250 to 400 BAC this is an infringement offence ($200 fine and 50 demerits), it has no court appearance, no reading of rights etc. Doing this seems heavy handed and may be factually incorrect to what would happen at the roadside.

Can you clarify please whether this backtrack should be there, also I am not sure it is actually needed for the advt to be effective particularly for this target audience

Many Thanks

Mike

From: Advertising
Sent: Thursday, 16 April 2015 4:53 p.m.
To: Advertising
Subject: New road safety advertising campaign: Drink-driving

New advertising campaign

Drink-driving

The laws around how much alcohol you can have in your system before you drive changed on 1 December 2014. This change affects all drivers aged 20 years and over, but the people most affected are those who have driven for years after a few drinks believing that they’re safe. Years of successfully getting from A to B after drinking at these levels and driving has reinforced their behaviour.

But ‘just a few drinks’ is now enough to get caught.

The target audience

Our new campaign targets people who are normally good, law abiding citizens of both genders aged in their 30s and 40s. They’re the same people that consider drink-driving above the legal limit is unacceptable. They’ve always agreed with our drink-driving messages, but they’ve been well aware we have not been talking specifically to them: “Great message, but I’m not your target audience.”

Over time, they’ve set their own personal alcohol limits and have established a habitual approach to their own driving behaviour. This approach is based on their own perceived risk; they have felt safe to drive after they’ve had a few because they know they would be below the legal limit if they’re pulled over.

But the limit has changed, and for the first time they’re going to have to adjust their own personal alcohol limits to stay within the law.

Our approach

This campaign shows a recognisable situation our audience can relate to – socialising with family and friends over dinner and a few drinks. It portrays a couple typically attempting to round up the children as they head home after an evening with friends.

The campaign focuses on the reality that having ‘a few drinks’ over dinner like you used to potentially means you are no longer within the legal alcohol limit; this could lead to unintended and shameful consequences.

By reflecting their moral belief that drink-driving is wrong, we hope people will recognise the need to reset their own personal alcohol limits if they’re driving. They don’t want to run the risk of getting caught under the new law. And no one wants to be labelled a drink-driver.

The advertising

You can check out the new television ad via this link: http://youtu.be/1y9AQAFzqPw. The campaign will be supported with radio advertising in the first instance, and other material will roll out in the coming months.

The campaign launches on Sunday 19 April 2015. As new work is launched it will immediately be uploaded to the advertising section of the NZ Transport Agency website. You can keep up to date with all new material by checking http://www.nzta.govt.nz/about/advertising/drink-driving/index.html from 20 April 2015.
Kind regards

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